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NAME OF AUTHOR/NOM DE L'AUTEUR T. LUTAINA MALIYAMKONO

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NAME OF SUPERVISOR/NOM DU DIRECTEUR DE THÈSE DR. D.M. RICHARDS

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THE UNIVERSITY OF ALBERTA

ECONOMIC BENEFITS OF MANPOWER TRAINING PROGRAMMES AT THE ALBERTA VOCATIONAL CENTRE, EDMONTON

by

© T. LUTATINA MALIYAMKONO

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH

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FACULTY OF GRADUATE STUDIES AND RESEARCH

The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research for acceptance, a thesis entitled "Economic Benefits of Manpower Training Programmes at the Alberta Vocational Centre," submitted by T. Lutatina Maliyamkono in partial fulfilment of the requirements for the degree of Doctor of Philosophy.

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Supervisor

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. . . . . .
External Examiner

Date . . . . . .

ABSTRACT

The purpose of this study was to examine social and private returns to manpower training programmes operated at the Alberta Vocational Centre located in Edmonton. Five of the programmes offered during fiscal year 1972-73 were analyzed: Business Education, Nursing Orderly, Family Aide, Basic Skill Development Programme (High School and Basic Academic) and Custodial. The economic returns to each of these programmes were examined according to whether students completed or terminated their programme before completion.

Human capital theory, which views education as a form of investment on the part of the individual and of society, served as the conceptual base for the study. The relationship between the rate of return and a number of demographic variables was also examined.

Overall, the analysis revealed a tendency for the Basic Skill Development Programme to have greater present values and higher internal rates of return, accompanied by shorter pay-back periods, than the four occupationally oriented programmes. There were greater present values and higher internal rates of return, both social and private, for trainees who terminated their Business Education, Nursing Orderly and High School Programmes than for trainees who completed these programmes. Except for the Custodial and Family Aide Programmes, the remaining programmes, whether completed or

terminated, had greater than zero present values and internal rates of return of 10 per cent or higher. This finding held for both social and private returns. When maintenance allowances were included as benefits the following programmes were found to have over 50 per cent private internal rates of return: Basic Academic (completed), Business Education (terminated) and High School (terminated). However, allowances did not raise above zero either the present values or the internal rates of return for the Family Aide (terminated) and the Custodial (terminated) programmes.

Chi-square was used to determine statistically significant differences between groups of Terminated/Completed and Below average/Above average programme internal rate of return. Above average programme internal rates of return were obtained for the individuals who had worked before entering training; such individuals tended to complete their programmes. Individuals who were not welfare recipients prior to entering training obtained higher internal rates of return, and they tended to complete their programmes. Individuals who did not work before training cited family problems as the major reason for not working. Such individuals tended to complete their programmes.

Generally, the private present values and the private internal rates of return were higher than the social present values and the social internal rates of return for the five training programmes.

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CHAPTER I

STATEMENT OF THE PROBLEM

The purpose of this study was to measure the economic benefits which derive from the operation of manpower training programmes conducted at the Alberta Vocational Centre located in Edmonton. The major objective was to assess the probable economic yields to society and to the individual from expenditure on selected manpower training programmes.

Sub-Problems

(1) Do the economic benefits vary among manpower training programmes?

(2) Are the economic benefits higher for the trainees who complete their programmes than for the trainees who terminate their programmes before completion?

(3) Are the personal and background variables of trainees related to the level of economic benefits?

Significance of the Study

Academicians, policy-makers and practicing educational administrators increasingly agree that education ought to be viewed as competing with other forms of public investment and public services for claims on scarce resources (Weisbrod, 1964; Eighth Annual Review of the Economic Council of Canada, 1972 Worth Commission, 1972; Blaug, 1966; and Nyerere, 1967).

Adult and post-secondary education in particular, are being viewed in this light.

If education is considered an investment, it is important to know the returns on that investment. Miller (1956) measured private returns from education, Schultz (1960) studied returns from an educational stock, and Denison (1962) demonstrated that education was one source of economic growth. Both Denison and Schultz have extended their work by estimating the share of economic growth accounted for by education.

Such studies have used increased earnings as an indicator of the productivity accounted for by education. Earnings have been correlated with different levels of education. In a sense, all these measurements are addressed to the problem of determining the "point where the last unit of education yields a marginal social benefit equal to its marginal social cost" (Benson, 1968).

Rapid growth in non-university tertiary education and manpower programmes has occurred since the implementation of the Federal Training and Vocational Assistance Act of 1960. Such rapid growth has led to competition for the education and training dollar between the traditional system and the vocational system of education. Recent cutbacks in the rate of growth of university budgets have been associated with rapid growth of non-university tertiary education and manpower programmes. Increases in expenditures on such education and

the associated impact on government budgets and tax burdens have increased the demand for evidence on the returns from education (Bezeau, 1974).

Implicitly, the view has been that the dollar yield on the margin is higher if devoted to non-university tertiary education and manpower training programmes, than if devoted to the more traditional forms of post-secondary education. This means that there would be pay-offs to society from devoting resources to government-operated or subsidized manpower training programmes. Proponents of manpower programmes have emphasized two types of arguments in support of this view.

The first idea rests on the assertion that the costs involved in providing such training are outweighed by future benefits in the form of increased worker productivity. If this is the case, then training programmes provide for increased allocative efficiency in the utilization of scarce resources. They also place society on a higher long-run growth path of output (and possibly enable a higher rate of growth). They are likely to provide for an improved unemployment-inflation trade-off, by lessening the possibilities of bottlenecks and structural unemployment (Somers and Wood, 1969).

The assertion immediately raises the issue as to why private decision-makers in a market economy either cannot undertake or are unwilling to undertake these profitable investments on their own in the absence of government

intervention. In other words, if the training "investments" are indeed profitable, why have individual workers and employers not taken advantage of these opportunities privately? The reasons for this market failure include the suboptimal provision of information to private decision-makers, and the uncertainty and risks involved in the costs and benefits of the training of workers. Such market defects call for government action. On this point Somers and Wood (1969: 46) write:

> It is natural that private enterprise would develop the best risk individuals and leave others to fend for themselves. Consumers are then required to pick up the pieces. The need for the development of our federal and state social security and employment service systems are witnesses to this process.

Private insurance schemes, for example, are notoriously known for turning away high-risk cases (Wilcox, 1969).

The second argument emphasizes the possibility of a different kind of pay-off, which might exist even if costs of training are not outweighed by future benefits in the form of enhanced output. Income distribution and equity considerations are important. Perhaps the trainees are people to whom society finds it desirable to transfer income in any case, and transfers via subsidized training might be a preferred method. Society values a dollar transfer more when self-help is involved. If such is the case, then training based on the higher valuation society places on income distribution through education is as important as training based on economic efficiency. Evaluation with respect to non-economic values

is obviously difficult. One knows little about how much society is willing to pay for training geared to the purpose of income distribution. Nor does one know exactly how to value the income distribution pay-offs associated with the use of other alternative methods of redistribution. The choice would seem to depend, in part, on the importance of generational effects whereby the future productivity of children is enhanced more if the family receives welfare assistance via subsidized training rather than by means of outright grants. However, at the very least, training programmes would have to pass the test of having improved the trainees' capacities by more than enough to offset their own net non-subsidized costs involved in taking training.

It was pointed out earlier in this section that the purpose of the study was to measure the economic benefits derived from manpower training programmes conducted at the Alberta Vocational Centre, Edmonton. The major objective was to assess the probable economic yields to society and to the individual from Basic Skill Development and Occupationally oriented programmes. The latter category included the Nursing Orderly Programme, Custodial Training and The Family Aide Programme.

The yields for each of the programmes differ along two dimensions. One dimension relates to who benefits. In this regard benefits accruing to the individual are distinguished from benefits that accrue to society. The other dimension relates to whether the benefits are economic or non-economic.

The study was limited to the former. The costs and benefits were related by computing present values and internal rates of return.

ASSUMPTIONS

A major assumption of the study was that in the absence of an overall evaluation technique, cost benefit analysis would capture the most important issues related to costs and benefits of manpower training programmes.

Changes that were observed in the earnings of the trainees before and after training were assumed to be as a result of the training programme and not the result of factors such as increase in age, self-confidence, etc.

DELIMITATIONS

The delimitations of this study were of two types. One concerns the nature of the elements within the investigation while the other concerns the population of the study.

The population under investigation was derived from the 1972/73 list of students enrolled in five programmes at the Alberta Vocational Centre in Edmonton: (i) Basic Skill Development, (ii) Nursing Orderly Programme, (iii) Business Education Programme, (iv) Family Aide and (v) Custodial Programme. Only demographic data considered to have an influence on costs and benefits of training were gathered from the interviewees and form the institutional records.

LIMITATIONS

An obvious limitation was the reliability of the answers given during interviews. One may argue that human beings tend to respond to non-quantifiable questions in a way that they think will be acceptable to the interviewer; and also, individuals have a tendency to "colour" their answers, particularly information pertaining to personal life styles and incomes. In the present study, the subjects were guaranteed anonymity. It was assumed that this procedure would result in data of greater accuracy than those collected by the institution.

Secondly, cost-benefit analysis may not capture all significant costs and benefits of the manpower training programmes examined since the study did not include psychic costs and benefits.

DEFINITION OF TERMS

Operational definitions of terms commonly used in the study are set out below. A more complete discussion of these terms is provided in the body of the study.

Pay-off period. The pay-off period is the time in years which must elapse before discounted net benefits become positive. This is a break-even point indicating the number of years needed for a human capital investment to become profitable.

Capital. All produced goods which are used as inputs for further production are labelled capital; for example, the buildings and equipment, carrying a "book value" of $500 or more are capital in the present study.

Discount rate. The discount rate is the rate of interest used for finding the present value of a sum of money due in the future.

Earnings. Income derived from wages and salaries including some fringe benefits are defined as earnings.

Human capital. In general terms the terminology refers to accumulated investment in the education, skills, health and welfare of a nation's population. In this study human capital refers specifically to training embodied in the labour force.

Internal rate of return. The internal rate of return is the discount rate which results in a present value of zero for a cash flow stream. In the present study the cash flow stream consisted of costs and benefits.

Present value. Present value is the value in current dollars of a sum of money receivable at some time in the future. In this study, present values were calculated for the additional income resulting from training.

Private costs. Private costs were regarded as costs incurred by the individual for attending training.

Private net benefits. Private net benefits were regarded as earnings (net of taxes) after training.

Social cost. The social cost is the value of the total financial resources which society allocated to run the programmes (cost of buildings, instructors' salaries and equipment).

Social benefits. The social benefits are the dollar value of the additional goods and services produced by an individual as a result of training.

Overview of the Study

The dissertation has seven chapters. In Chapter I is a general introduction to the study. Chapter II reviews the relevant cost benefit literature related to manpower training programmes. Chapter III outlines the research design of the study. Chapter IV presents results from the social point of view. Chapter V presents results from the private point of view. Chapter VI discusses the relationship between personal and background variables, and below-average and above-average rates of return. The chapter also discusses the relationship between personal and background variables and completion or termination of programmes. Chapter VII is a summary of the study.

CHAPTER II

REVIEW OF THE LITERATURE

Chapter I stated the problem to be examined in the study. This chapter reviews the literature that is relevant to this study.

The purpose of the study was to estimate the net social and private economic benefits of five manpower training programmes operated at the Alberta Vocational Centre in Edmonton. There exist two kinds of benefits related to education: education as an investment and education for consumption (sometimes referred to as psychic benefits of education). For example an individual who takes up studies in art and appreciates the studies for their own sake is thought to be deriving psychic benefits from education. Alternatively an individual who studies art and not only develops an interest in art work but also participates in the market, selling or buying, is said to be benefiting economically from this study of art.

From which individual society benefits most, or which of the two individuals benefits most, are questions beyond the domain of the present study. In this study only the economic values of education were considered; therefore, the review of the literature is restricted to issues related to the

nature of economic costs and benefits of education.

While cost benefit analysis has been used widely, it is not without deficiencies. A detailed discussion of the criticisms of cost-benefit analysis may be found in Wilkinson (1965: Chapter 3). For the purposes of this study the following criticisms have been outlined:

(i) The returns accrue to education through quantity as well as quality (Morgan and Sirageldin, 1968).

(ii) Cost benefit analysis does not explain the effects of education on personal income distribution (Schultz, 1968).

(iii) One does not know whether returns from education result solely from the possession of an "admission ticket" to the job or whether they represent higher levels of productivity achieved by the better educated (Berg, 1970).

(iv) Cost benefit analysis assumes a truly competitive market, perfect information and credit facilities equally available to all (Wilkinson, 1965).

(v) These tools do not separate economic benefits which derive from means other than the training - socialization, for example.

(vi) Studies using rates of return and present value techniques fail to capture non-monetary benefits.

MEASUREMENT OF THE ECONOMIC BENEFITS

There seems to be three major categories of educational planning approaches: the social demand model, the manpower demand model and the rate of return model. While these three approaches have economic implications, the rate of return model is most rigorous. Essentially the rate of return is concerned with estimating the percentage return on the educational investment expenditure. It involves either cost benefit analysis or cost-effectiveness analysis whether the concern is the evaluation of private or social investment.

An exposition of the concept of human capital is fundamental to the treatment of cost benefit analysis as a group of educational economists have argued (Blaug 1968: 135-36). One of these economists, Schultz (1963) indicates that education may be viewed in two ways: firstly, it may be pure consumption by providing satisfaction in the present and immediate future; secondly, it may be an investment in increased productive capacity. It is from the second order of viewing education where human capital theory derives its operational definition.

Cost-beneift analysis may be used to view education as either a social or private investment. Blaug (1970:70) reports a study that revealed job expectations as being ranked above all other motives in the decision to continue with school beyond the compulsory leaving age. On the basis of the study he argued that households choose education on rational

economic motives. Thomas (1971:95) argues that the lack of information on the costs and benefits of education may severely limit the ability of households to make educational decisions on purely economic grounds.

Knowledge of educational private rates of return may be used to determine those educational programmes which are most beneficial to the student and are therefore most likely to attract students. Alternatively social rates of return may be used to justify further expenditure on education as well as to compare the benefits of different forms of education.

While it is normal in society for costs to be measured by money expended and for non-money costs to be ignored it is necessary to define costs in terms of the total opportunity cost (a detailed discussion of the concept of opportunity cost is included later in this chapter) in order to determine marginal benefits accruing to educational investment.

Psacharopoulos (1973:24)* summarizes what studies of the returns to education have all been about and implicitly discusses the problem assessing what the increased incomes which results from increased education mean. He says:

> Practically all of the estimated rates of return to investment in education are neither ex ante nor ex post. They are simply cross-sectional rates used either in an ex post or ex ante sense according to

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*Psarcharopoulos, G. Returns to Education, Jossey-Bass Inc., Publishers, Washington, 1973.

> the author's convenience or in order to solve the problem at hand! It is not difficult to understand why this is so. Ideally, an ex post rate of return should be derived by following a given cohort through time. But this is extremely difficult due to lack of time series data on earnings by educational level. On the other hand, an ideal ex ante rate of return should be computed on the basis of future earnings of graduates by educational level. Therefore, in view of these empirical difficulties, rates of return are estimated on the basis of today's cross-sectional data which are extrapolated either backwards or forwards in time in order to obtain ex post or ex ante profitability measures.

THE COST OF EDUCATION

The cost of education, in the economic sense, may be defined as being the benefit foregone. Assuming conditions of a competitive market, the cost of the investment is equivalent to the cost of goods that might have been consumed.

Social costs are measured in terms of the opportunity cost for society and consists of payments made by society in order to obtain this good and the economic value of the alternative uses that society could have made of its resources. Private costs may be thought of as the opportunity cost for the individual which consists of payments the individual makes together with the economic value of the alternative uses.

Direct Costs

Direct costs entail a monetary outlay and therefore they may be distinguished from those costs which do not entail an expenditure of money such as foregone earnings. This category may be further subdivided into operational costs and capital costs.

Operational Costs

Operational costs are total institutional expenditures. Included under this definition are administrative, maintenance, and instructional salaries, equipment and supply expenditures, physical plant expenditures and any other expenditures such as travel allowances (Ziemer, 1971, p. 13).

Instructor's wages and benefits may be easily identified, assuming the institutional accounting system furnishes sufficient detail, and similarly for maintenance, administrative and supply expenditures.

Some problems occur in assigning the right proportions of expenditures to activities which utilize joint inputs. Some methods in current use for prorating such costs for different services are to:

(i) distribute supply, materials, equipment and expense cost to the same proportions that salaries were distributed by utilizing programme analysis and,

(ii) identify usage first and distribute cost proportions accordingly.

The latter method may be more accurate but more expensive. On the other hand, the first one is more practical, less complicated and less accurate. In addition, prorations based on proportions derived from instructional costs may not distort calculations much because the instructional costs are a large portion of the total cost, since education is a

labour intensive investment which makes little use of equipment as Benson (1968 pp. 71-72) has suggested.

Capital Costs

No educational institution operates without capital assets: land, buildings, machinery and equipment. The cost of capital usage ought to be included as part of the cost of the operation. Some studies in this area have completely ignored capital costs on the grounds that such costs are arbitrarily ascertained for individual years (Kaufman, 1969). Another reason given to exclude capital cost in the calculations is that capital cost represents a very small proportion of total costs. Kaufman's study, which was done in the United States, estimates capital costs to be 7.2% of the total cost. But the study cannot necessarily be generalized to any other country or to any other institution of learning.

Major components of capital costs include: machinery and equipment, land and buildings. All of these yield a stream of services for more than one accounting period. Therefore costs have to be allotted among accounting periods. A problem arises and that problem is that comparable data reflecting the actual value of services provided are not directly available. In the absence of such information, capital costs, on a current basis, have to be estimated. With respect to estimations, two questions need to be settled: the life of the capital and the value of it. In estimating

the life of a fixed asset considerations of physical depreciation and obsolescence are important. "It is the period of expected economic usefulness that governs" (Finney and Miller, 1960, p. 7). Ziemer (1971) has suggested that in estimating the depreciable life of facilities, both the type of construction (brick, ferro-concrete, frame) and the purpose of the facility should be identified. The warning is that certain facilities become functionally obsolete faster than others. This argument of differentiation of the nature and use of the facility extends to the factor of obsolescence. Perhaps it is reasonable to contend with Ziemer (1971, p. 59) that the technique adopted to determine the depreciation of the life of capital and equipment facilities should represent an acceptable trade-off between being easy to compute and accurate.

A general problem inherent in these capital evaluative methods is that they provide only crude measurements based on estimations rather than accurate calculations.

Indirect Cost (Foregone Earnings)

Blaug (1965) maintains that there exists controversy about the issue of foregone earnings as an item of educational expense. Two questions ought to be considered. One is whether or not foregone earnings should be included in the estimates of human capital. Secondly, if they are to be included what value should be placed on them.

To the individual attending training foregone earnings are a cost item because they represent the income the

individual loses. To society foregone earnings represent the loss of productivity in that the individual taking part in training is automatically excluded from the productive labour force. Blaug argues further that the understanding of the foregone earnings issue is related to the understanding of why people from low income families find it imperative to drop out of school. Related to this question is the one of how scholarships and bursaries or simply subsidization of education should be treated in cost benefit studies. Private benefits are computed in this study both excluding and including allowances.

Estimating foregone earnings presents problems. An estimation of the average earnings for similar people in the labour force, adjusting these average earnings downward to take care of the unemployment, has been used. Schultz (1962, pp. 147-169) calculated the difference between the adjusted average earnings and the average part-time earnings to be the opportunity cost of attending training. Several problems arise in accepting this procedure. First one is not sure of the assumption itself that a school attending cohort may correctly be represented by a similar cohort presently in labour force. Some people (see Wilkinson 1965, p. 12) have argued that the assumption may be misleading because of the uncontrollable effects. It has been argued that those who stay in training have more ability than their counterparts and therefore the foregone earnings of the former group are

underestimated. Alternatively it has been argued that in fact foregone earnings are overestimated if it is assumed that the marginal productivity of labour diminishes if school attenders were to join the active labour force.

The procedure that treated foregone earnings as part of the cost of training will be found in Chapter III.

Other Costs

Support services are another cost component which should not be ignored. Such costs are identifiable in an institutional accounting system. They include such services as general administration, library services and maintenance. Maintenance may be divided into repairs and plant operation.

The methods of prorating such expenditures vary from an on-the-job cost system to an allocation by square feet. Unfortunately, such methods are tedious and require enormous resources. Straight-forward proxies which are easier to handle seem to be gaining ground in recent literature. The use of student and faculty population or dollar volume has been recommended for prorating these costs (Evans, 1954, p. 41). Instructional cost proportions might be one way of prorating indirect costs. This method has its own weaknesses even though it encompasses dollar volume and the full-time equivalent student proxy, for no relationship between the two inherent factors may exist. On the other hand, the method avoids burdensome analytical procedures and the expenses likely to be incurred using any of the more delicate

or more sensitive approaches as Ziemer (1971) has noted.

In summary the social cost of education or training involves materials (books, etc), travel and educational living expenses, foregone earnings, building amortization or rent and operating costs. To the individual pursuing training the costs may be summarized as involving materials (books, etc), travel and additional living costs and foregone earnings, net of taxes. Often there exists a danger of double counting some of these cost components. For example, travel and additional living costs should not be counted when computing the private costs of training if such expenses are covered by society in one form or another. Living allowances received by trainees attending training at AVC - Edmonton illustrate the point.

EDUCATIONAL BENEFITS

Economic Benefits

When benefits received outweigh costs, then from a purely economic perspective, investment in education is worthwhile. To examine this relationship, it is necessary to list all cost components, add them togehter and subtract them from the total revenue using appropriate discounting procedures. Unfortuately, revenues in education cannot be related to a single index because the benefits are multi-dimensional. Most of these benefits in education may be seen as educational functions and they include: economic efficiency, income distribution, socialization and consumption (Kaufman, 1965), to mention only a few.

Present-day tools of measurement have concentrated on only one of the educational functions: economic productivity benefit. The indication of the economic productivity is the positive difference between revenue and expenditures. This is true of a manufacturing firm as it is of education, yet in education, earnings are not necessarily a benefit, rather, they are indicators of benefit. This difference has led critics to raise a number of issues.

There are problems of measurement of earnings, apart from problems of definition. Even if the measurements were appropriate one might question whether other sources of income from work, i.e., part-time, should be included. Secondly, other factors affect earnings: ability, motivation and other personal characteristics. The magnitude of the contribution made by these other factors cannot be statistically measured. On top of that both the supply of and demand for specific skills are subject to the structural changes in the economy and to cyclical economic changes. Alternatively, from employment and earnings other benefits accrue. Tax revenues generated by subsequent greater productivity are an example. Kaufman (1965) has warned though that increases in tax rates ought to be distinguished from tax revenues attributable to a larger output. The circle of benefits continues for some of the taxes go back to pay for education, in this way creating some spillovers. Further benefits as a result of employment are the reductions to the burden in welfare

expenditures: unemployment compensation, social assistance and the like. Certainly the majority of welfare recipients must be members of low income levels. From a purely economic point of view earnings must be higher than expected transfer payments in order to maintain the desire to remain productively employed. Finally, educational benefits may be seen as a means of income distribution allowing movements of individuals from low to high socio-economic class.

Two points need emphasis. First, that a cluster of benefits derived from increased education is valuable for society as well as for the individual. Secondly, that there are numerous benefits of education to which one cannot assign dollar values.

Economic Benefits Related to Manpower Education

Economic benefits of manpower training fall into two broad categories as Hardin (in Somers and Wood, 1969) has noted. There are benefits related to transfer payments. However, transfer payments are by themselves not an indicator of increased productivity from the point of view of society. They are a gain to one group of individuals and are a loss to another group. The second category of benefits received from manpower training programmes is related to the increased productivity. The removal of bottlenecks by training and reallocation expands employment and affects productivity which automatically affects earning levels. The real benefits of

manpower training programmes are the increased labour productivity and the spillovers. Some of the spillovers have been identified in the literature. Rehn (1969) in discussing the multiplier effect argues that training opens up bottlenecks in the use of skills. He assumes that jobs are available and that they depend on the necessary skill to be filled. Goldfarb (1968) has demonstrated that apparently acquisition of skill is not a necessary and sufficient condition for employment, at least not so in the United States. Both lines of thought are evidenced in the real world. Employers are continuously asking for training qualifications (conspicuous consumption). Contrary to this view there are jobs which require special skills not available in training institutions. Employers of people in such jobs prefer on-the-job training as Becker (1964) suggests.

The complementary effects referring to movements in the labour force has also been put forward by proponents of manpower training programmes, (Sommers and Wood, 1969). It is maintained that trained labour moves up and creates vacancies for the untrained labour. Goldfarb (1968) argues that complementary effects largely depend on the nature of the industry and the objectives of employers. One would assume that an employer would not be better off by receiving a poor quality of labour provided by the labour that replaces those who have taken up high paying jobs, unless there were monetary benefits to reap on the part of

employers.

Profit effects occur when higher productivity by a given job holder does not produce higher wages to him because of market imperfections or the increase in non-monetary rewards. In real economic benefits the trainee taking up scuh a job is not better off than he was before. On the assumption that the individual has had sufficient information and presumably is a rational man, his observed personal benefits in the new but lower paying job may have no relationship to his pecuniary interests.

Programme evaluation concentrates on immediate income changes as the principle criteria for the "success" of the programme (Hardin 1969:18). However, several conceptual problems exist, particularly when the evaluation of training programmes takes a short term frame of reference. A major problem is that increased earnings commonly known as tangible measures of programme output may be less significant than the intangible measures which refer to changes in attitudes and motivation. Secondly, even if increased earnings and employment were considered valid measurements of "success" of the programmes, difficulties arising from the problem of a "control group" methodology are virtually insurmountable as noted by Dymond, Sewell and Cain and Hollister (in Somers and Wood, 1969). The "control group" problem is made worse by the lack of adequate data on manpower training programmes and by the fact that benefits gained from training programmes might

dissipate along with the general economic expansion as Somers (1953:250) has suggested. In the following approach which makes use of the before and after training control group, the effects of intangibles such as attitudes and motivation are assumed to be held constant.

In short the economic benefit to society from education or training may be summarized as being the increase in earnings (taxes included) as a measure of increased productivity whereas the same volume of earnings, less taxes, is in fact the benefit to the individual. Personal but non-economic benefits of training may be important to the individual when making decisions regarding a training programme.

CRITICAL ISSUES

The body of literature in manpower training programme evaluation seems to point out three areas of concern, now called critical issues. The first one is the problem of the control group which was dealt with earlier in this chapter. The second issue relates to the problem of the source of data in manpower studies. The third issue relates to the question of follow-up studies. In the following paragraphs the discussion is limited to the second and third issues.

Lack of a Theoretical Framework

Cain and Hollister (1969: 128-129) have pointed out the problem of lack of consensus among project administrators and evaluators in so far as the degree of scope of evaluation

study and the selection of variables to be analyzed are concerned. The problem is that unless there is evidence that the success of a programme is not dependent upon a particular time or place then success is irrelevant to the evaluation of the programme. Williams (in Cain and Hollister, 1969:128-129) supports this conclusion.

Sources of Data in Manpower Studies

In the majority of cases individuals do not readily want to provide detailed information about themselves or about how they spend their time. Even when they are tolerant the information is not always correct. It is essential to procure some information on an individual from elsewhere and leave only personal or unrecorded information for the individual to provide. Borus (1971) has suggested many sources of information. The problem is that Borus' suggestions are primarily for use in the United States. Here in Canada, and especially in Alberta centralized information is not available and agencies which may have some useful information are, by law, prohibited from releasing it. Agencies like Alberta Health Care Commission could provide valuable information including easy means of contacting the respondents. Such agencies as the Unemployment Insurance Commission may be a possible source of information only when there is a high rate of unemployment. Alternative means of gathering data call for full co-operation with continuing students and the instructors primarily as a stepping stone to locating

respondents. Less formal means may be helpful to contact the hard-to-locate respondents. Problems arising from low reliability of information provided may only be solved by double-checking, i.e., using more than one source of information. One way of collecting information about the target population is to follow it up. Because the present study used follow-up as a means for gathering information it is relevant to highlight its strength and weaknesses.

Interviewing

The significance of follow-up studies has been noted by many writers and researchers, including: Roueche and Boggs (1968:57), Sharp and Krasnegor (1966:15-16), Denison and Jones (1969), and many others. This group of writers has pointed out two approaches for follow-up studies: the mailed questionnaires and the interpersonal interviews. It is claimed that the interview technique is superior to the questionnaire approach in that the latter, though less expensive, tends to have a low rate of response.

SUMMARY

In this Chapter an attempt has been made to focus on costs and benefits of manpower training programmes and their relationship to the individual trainees and the society at large. The review of the literature was intended to bring out an up-to-date discussion of the issues involved and to guide the approach to the methodology of the study. Critical issues

related to the evaluation of manpower training programmes were discussed conceptually. Chapter III carries the study one step further and illustrates how the important concepts developed in the present chapter can be applied to the problem at hand - evaluating manpower training programmes conducted at the Alberta Vocational Centre in Edmonton.

CHAPTER III

METHODOLOGY OF THE STUDY

The research design used in the study is outlined in this chapter. The main design was developed from components of benefit and cost analysis. Such methodologies as net present value analysis and the internal rate of return were employed as computational techniques to arrive at possible benefits. The computation of various cost components is shown later in this chapter.

Research Design

The research methodologies employed in measuring the economic benefits of the five training programmes was the comparison of streams of possible income against streams of cost. To use this approach both streams must refer to a "benchmark" which essentially is the base year value; this has been called the present value. The formula for the present value analysis is given as:

$$PV_o\ (Y)\ -PV_o\ (X) = \sum_{t=1}^{t=m} \frac{Yt}{(1+i)^t} - \sum_{t=1}^{t=m} \frac{Xt}{(1+i)^t}$$

where

t is the year after start of training,

V_o is discounted value of incremental income or expenditure,

Y is incremental earnings in dollars attributable to the training received,

m is the number of years after the start of training (training plus working life),

i is the interest rate for a selected time period,

x is the average cost (assumed to be equivalent to the marginal cost).

n is the length of training in years.

An investment in education is worthwhile if the present value of the benefits is equal to or greater than the present value of costs.

The second approach to assessing economic benefits was the computation of the internal rate of return defined as that rate which makes the net present value of the investment equal to zero. The internal rate of return is obtained by solving the following equation for i:

$$V_o\ (Y) - V\ (X) = \sum_{t=1}^{t=m} \frac{Yt}{(1+i)^t} - \sum_{t=1}^{t=m} \frac{Xt}{(1+i)^t} = 0$$

The Ceteris Paribus Assumption

Adjustments for ability, and family background of the trainee were considered irrelevant in manpower education. Adjustments of ability, family influence, ambition, experience

and similar influencing factors vary from individual to individual. Different studies have used different weighting factors. It is logical to contend that such factors as the above have had an influence on the before-training earnings of the students and have therefore been accounted for in the earnings differentials.

Ideally only reported foregone earnings should have been included. This approach created difficulties when determined in marginal changes in earnings. Hence the programme mean earnings were used for the non-wage earners before and after attending training. The assumption was that programme trainees are in fact an homogeneous group.

Components of the Model

The formula shown on pages 29 and 30 encompasses the efforts of several people, even though Becker (1968) first applied it to human capital. Modifications in the formula were necessary to accommodate this study. The formula is:

$$V_o\ (Y) - V_o\ (X) = \sum_{t=1}^{t=m} \frac{Yt}{(1+i)^t} - \sum_{t=1}^{t=m} \frac{Xt}{(1+i)^t} = \geq 0$$

The discounted benefits and costs to society = - yields the internal rate of return. The formula was elaborated in the following manner for the computation of social returns:

$$[V_o(Y) = (Y + Psy)] = [V_o(X) = (Fp + Copc + Cc - Pt)]$$

$$= \sum_{t=1}^{t=m} \frac{Yt}{(1+i)^t} - \sum_{t=1}^{t=m} \frac{Xt}{(1+i)^t} \geq 0 \text{ P.V.) or } = 0 \text{ internal rate of return)}$$

where

$Y_t = It + Psy_t$

$X_t = Fpt + Copc_t + Cc_t - Pt_t$

i is the given interest rate,

Yt is the real increase in earnings accruing to society in time m or n, before tax,

Psy_t is the psychic benefit, e.g. better citizenry: illustrated by the understanding of the electoral system,

Fp_t is the foregone productivity of the trainee measured by the earnings foregone,

$Copc_t$ is the current operational cost of programmes,

Cc_t is the capital cost of the programmes,

Pt_t is the part-time earnings of the trainees who worked while attending training,

Y_t is the cost of the programmes in time t.

The formula for the private benefits was done in the following way:

$$[V_o(Y) = (Y + Psy)] = V_o(X) = (Fe + Lwp + Ec)]$$

$$= \sum_{t=1}^{t=m} \frac{Yt}{(1+i)^t} - \sum_{t=1}^{t=m} \frac{Xt}{(1+i)^t} \quad 0 \text{ P.V.) or } = 0 \text{ internal rate of return)}$$

where

$Y_t = It + Psy_t$

$X_t = Fe_t + Lwp_t + Ec_t$

i is the given interest rate of the investment,

t is the number of time periods of working after training,

Yt is the increase in earnings (net of taxes) in time m or n,

Fe_t is the opportunity cost accruing to the individual (net of taxes),

Lwp_t is the loss of welfare payments to the welfare recipient attending training,

Ec_t is the extra cost (e.g., books), to the individual purchasing books pertaining to his training,

Xt is the cost of training to the individual during training.

Selecting the Discount Rates

Benefits accrue at different times from the investment expenditure, it is necessary therefore to discount both costs and benefits to a common date in order to establish the present value of the investment. The selection of an appropriate

discount rate is in controversy. Dibski (1970, p. 41) after examination of the problem concluded that the selection of a discount rate is done arbitrarily. It would appear that the Baumol (1970) concept of the opportunity cost is most appropriate because it has been suggested that the opportunity cost concept, "is consistent with the interest rate being the cost of the capital in the same way that the wage rate is the cost of labour" (Bezeau 1974, p. 3). Several discount rates have been suggested, for example, the average return on common stocks. In Canada, the Toronto Industrial Index and Dow Jones Industrial Average have showed returns on capital ranging from 2.3 per cent to 5.4 per cent. On the other hand, Edge (1965) recommends a rate of 10%, suggesting that the minimum acceptable return should take into account both the degree of risk and market conditions. He also reported that returns from stocks fluctuate from year to year, that the returns varied considerably according to the period of the investment and that before taxes stocks on the average return about 10% to 15% per annum to the investor.

The rate on long-term government bonds has been used as another way of selecting interest rates for cost-benefit analysis. Prest and Turvey (1965) maintain that rates established on the basis of government bonds are risk-free. Hence they suggest that for government investments such risk-free rates should be used. Thomas (1971) concludes that the interest rate to be used should be that which must be paid

to obtain funds from a bank by an individual borrower to pay for an investment expenditure.

In this study it was decided that several discount rates would be used. This presents the user of the study with a choice of discount rate according to his assessment of risk.

The base discount rate was established at 10%, which was approximately the risk-free interest on government bonds in 1973. At the lower end 4% was selected as the rate that would suffice for someone placing more value on the non-economic benefits of education. For investors in education expecting the highest interest rate or who need to be induced by the highest possible rate, a 14% interest rate was chosen with the realization that such high interest rates exist in high risk investments.

For the present study discount rates of 4%, 10%, and 14% were used.

Detailed Methodology Used in Computing Costs and Benefits

In this section the methodology used in calculating various cost and benefit components is reported. The cost components are treated first.

Operational costs. To obtain the cost per student day from the current operational costs the following procedure was followed. The 1972/73 operational expenditures, by programme, were obtained from the Provincial Treasury. Expenditures on administrative and other supportive services, including the

the library, not directly related to a programme, were assigned according to the percentage cost of each of the programmes in relation to total operational cost.

The programme operational costs were divided by the number of training days and by the student enrolment within each of the programmes for the 1972/73 fiscal year.[1]

Programme operational cost percentages were used for any other cost components that required proration, the rationale being that operational expenditures are usually over three-quarters of any other cost components (Benson, 1968:71).

Capital cost. Capital costs for the period 1972/73 were obtained by taking into account the book value of the building and the equipment and assuming a useful life of 50 years was given for the building. Equipment costing in excess of $500 cost price was given a life of 5 years. Reasons for such a life are to some extent arbitrary but these figures are in line with the figures used by the Department of Public Works. In order to keep the figures comparable the 1971

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[1] Derivation of Cost per Student Day:

(i) Total operational cost 1972/73 (adjusted for inflation) + interest rate at 10% = Total cost (Tc)

(ii) $Tc \times \frac{\text{(Programme percentage)}}{100}$ = Operational programme cost

(iii) $\frac{\text{Operational Programme Cost}}{\text{number of students in a programme}} \times \text{number of student days}$ = Cost Per Student Day

building and equipment costs were expressed in terms of 1973 dollar. The "National Series" of the Canadata Southam Construction Index issued by the Business Publications was used. The Southam Construction Index is an accepted standard measure used by the Quality Surveyors of the Alberta Public Works Department for construction contracts issued by the Department.

Like the Consumer Prices Index the Southam Construction Index uses 1961 as a base year (i.e., 100%). From 1961 to 1971 (when the AVC building was constructed) the index rose to 163.6% and by 1973 it had risen to 221%. Since the yearly average was used on all calculations affected by the Consumer Price Index, it was considered consistent to use the yearly average for 1973 on all figures affected by the Southam Price Index too.

Imputation of capital costs to the programme on a student-day basis was accomplished by applying the operational cost percentage already established.[2]

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[2] Per Student Day Capital Cost:

(i) 1971 Book value of the building (inflated for 1973 $ power)

(ii) 1973 $\frac{\text{(book value of the building)}}{50}$ = yearly depreciation

(iii) yearly depreciation + interest at 10% of yearly cost on yearly depreciation

(iv) $\frac{\text{yearly cost x programme percentage}}{100}$ = Programme Cost

The 10% rate was charged for only the yearly depreciation of the building because:

(i) Income from rent accruing to the use of some parts of the capital (e.g., income from parking permits) was not deducted from the yearly total cost.

(ii) No part of the capital yearly cost was assigned to the evening courses or to the theatre and or conference room often open to the public and government officials.

Foregone earnings. The underlying assumption for the estimation of foregone earnings is that a trainee will either work productively or choose to attend a training programme.

A number of difficulties arise from this argument. First, it is not possible to ascertain whether or not the trainee would in fact have worked during the time he was in training. One of the major reasons for the adult to return to school is to upgrade his qualifications or to take a trade

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(v) $\frac{\text{Programme Cost}}{\text{Programme School days x number of students in a programme}}$ = capital cost per student day

Per Student Day Equipment Cost:

The functional sum was obtained in a similar manner as in the case of per student day capital cost except equipment was assigned an amortization life of 5 years and 10% interest rate was charged for the total equipment book value (in 1973 money terms).

that will provide skills necesaary for employment. This argument assumes that lack of employment opportunities prior to training was mainly a function of lack of skills for jobs rather than unfavourable conditions created by lack of jobs.

Foregone earnings were granted to those students who had prior working records, that is, students who had worked for a period of one or more months wihtin the twelve month period prior to undertaking the training programme at AVC. The amount of earnings were based on the yearly average earnings before training. The yearly average earnings for each programme were used when determining foregone earnings for those individuals who had no working record for the year before entering a training programme.

The foregone earnings were inflated to the 1973 dollar purchasing power by using the Consumer Price Index. The specific formula used was:

Fp = Ae 1971/72 x per cent of 1973 inflationary factor

where

Ae 1971/72 is the yearly average earnings lasting for a month or more

Fp is the yearly foregone productivity (measured by the yearly average earnings).

Social and Private Costs and Benefits

Social and private costs included basically foregone earnings, transfer payments foregone (as private cost), operational and capital cost. Other costs conventionally included in such calculations were ignored in the present study.

Social and private benefits accruing due to increased training were first a conglomeration of gain, usually referred to as psychic (the consumption part of education) and a cluster of returns related to increased earnings together with fringe benefits. Only the latter category of benefits was included in the computation of the present study. It will be noted that to obtain private benefits estimated taxes were subtracted from the gross earnings.

The Analysis of Background Variables

In relation to the last two sub-problems, selected background variables such as: age, sex, marital status, record of previous employment, etc., were subjected to analysis. This analysis was conducted in two parts. The first part consisted of a partition of the sample according to completion and termination of the programmes. The second part consisted of a partition of the sample according to below and above mean programme private rates of return without allowances.

A priori null hypotheses were considered for each partition and for each of the forty selected personal and background variables (see Appendix C). The Chi-Square test

was used to test each of the eighty hypotheses. The null hypotheses were rejected in the cases where the level of probability of the Chi-Square was 0.05 or lower. In the instances where the null hypotheses were rejected the contingency tables were examined for possible differences between subgroups.

Construction of the Instrument

To ensure that the language employed in the data gathering instrument was clearly understood by the respondents a pilot test was conducted. Fifteen continuing students in each of the five programmes were asked to respond to the questionnaire. Several questions concerning the meaning of words or terms were raised by the students in the pilot test. Students continuing with the custodial programme experienced the greatest number of difficulties. This problem was understood when the research team was informed by AVC Instructors that the trainees in the custodial programme were persons of limited literacy.

Based on the results of the pilot study the instrument was modified. Copies were sent to the director, Vocational and Technical Education, Program Services, Department of Advanced Education; to two members of the researcher's advisory committee; to the Centre supervisor and his assistant. Finally, the researcher met with the Centre supervisor and his assistant to discuss details of the instrument. The content and the format of the final copy of the questionnaire

were left substantially up to the discretion of the researcher. The AVC authority requested that some questions be included for use at a later date by the Centre.

Identification of the Population to be Studied

Various activities had to be undertaken before the actual follow-up of trainees could be undertaken. This section discusses the procedure which was followed in preparing for the interview activity.

First, a master list of all students who were enrolled in the various programmes was compiled. For the basic skill development student intakes of August, 1972 to January, 1973; January, 1973 to June, 1973 and summer, 1973 were chosen. Records of students who were enrolled earlier than these dates were not complete. Only trainees enrolled during the 1972/73 fiscal year were selected for the remaining programmes; four terms for the business education programme, four terms for the custodial programme, three terms for the family aide programme, and thre terms for the nursing orderly programme.

For each of these, two major lists were compiled. One list consisted of those students who completed their programmes and the second list was composed of those students who terminated, that is, students who did not complete the programmes in which they were enrolled. The only exception was the basic skill development, where another classification was found necessary. Categorization of this group, was extended to

provide for "high" and "basic" schooling and these two sections were also further divided into two other groups: those who completed the programmes and those who did not.

The Population Sample

Table 1 shows the distribution of the population and the sample selected for the study. Stratified sampling was necessary inorder to accommodate the differences in numbers enrolled in the various programmes.

The returns from the respondents were as shown below:

High School	Completed	64	64%
	Terminated	14	28%
Basic Academic	Completed	15	60%
	Terminated	20	57%
Business Education	Completed	32	40%
	Terminated	10	25%
Family Aide	Completed	8	80%
	Terminated	9	90%
Nursing Orderly	Completed	7	41%
	Terminated	9	90%
Custodial	Completed	12	71%
	Terminated	3	30%
		213	53%

The returns represented 53 per cent of the intended sample (e.g., returns were 213 in number, out of 404 respondents in the sample).

TABLE 1

NUMBERS OF TRAINEES SELECTED FOR THE SAMPLE

BY PROGRAMME

Programme	Total Number on the Master List		Sample	Per Cent	Procedure
1. Vocational Programme (Basic Skill Development)					
(a) High School	Completed	386	100	25%	Every 4th name
	Terminated	200	50	25%	Every 4th name
(b) Basic Education	Completed	50	25	50%	Every 2nd name
	Terminated	70	35	50%	Every 2nd name
2. Basic Education	Completed	160	80	50%	Every 2nd name
	Terminated	80	40	50%	Every 2nd name
3. Family Aide	Completed	30	10	33 1/3%	Every 3rd name
	Terminated	30	10	33 1/3%	Every 3rd name
4. Nursing Orderly	Completed	50	17	33 1/3%	Every 3rd name
	Terminated	30	10	33 1/3%	Every 3rd name
5. Custodial Programme	Completed	50	17	33 1/3%	Every 3rd name
	Terminated	10	10	100%	All students who terminated
TOTALS	Completed	726	249	—	
	Terminated	420	155		
OVERALL TOTAL		1146	404		

The Problem of Correct Mailing Address

It was expected that student files would contain both telephone numbers and mailing addresses. This was not the case for most students. The majority of telephone numbers and addresses obtained fromthe files were out of service; either students had moved or changed their phone numbers. This necessitated extensive use of the directory assistance at Edmonton Telephones. About 50% of the subjects could not be reached through this avenue and the research team, the writer and two assistants, sought the assistance of the Department of Advanced Education, the authority that had commissioned the study, to solicit the co-operation of other agencies in tracing the respondents.

Period Spent in Training

The period of time which the individual trainees spent in training may be misleading. Ideally the after-training benefits should have taken into consideration the total number of days a student spent in training regardless of the programme initially pursued. For example, a student who was classified as being in the Business Education Programme may have taken some courses in preparatory education prior to gaining admission in the Business Education Programme. This was so in particular for immigrants. In a case like this it would probably have been misleading to credit only the time during which the student was in the Business Education Programme as responsible and that this problem involved 5% of the

the total sample for any after-training financial benefits which the trainees received.

However, in view of the fact that records were not available it was decided that training time would be by programme (e.g., that it would be assigned to the programme in which the trainee was registered as shown in the records when the sampling was done).

SUMMARY

The research design used in this study was presented in this chapter. Cost and benefit components and the way of computing them were shown. The chapter also presented details of the sample (e.g., out of a trainee population of 1146 a sample of 404 was selected). The returns were 53% of the sample. It was stated that data collected for the study were obtained through conducting interviews with trainees who have completed their training.

CHAPTER IV

THE RESULTS OF THE STUDY: SOCIAL BENEFITS

For convenience the results of the study have been reported in three separate chapters. This chapter reports the findings on the social present values and the social internal rates of return. In the first section the social present values and the social internal rates of return of all programmes are reported. The second part of the chapter discusses the social present values and the social internal rates of return to all the programmes. It will be noted that the Basic Skill Development Programme is divided into two parts: H igh School and Basic Academic, thus twelve tables have been constructed.

Using the formulae outlined in the previous chapter, the social internal rates of return and the present values of discounted earnings streams net of social costs were calculated. The marginal economic benefits were considered to be entirely a function of training and no adjustments were made for possible unemployment. Projecting earnings streams into the future at a constant rate assumes continuous productivity, whereas it is possible for certain individuals to fail to work continuously for reasons of their choice or changes in job markets. In the absence of adjustments for such things as unemployment, benefits are likely to be overestimated. Thus, conclusions

regarding the marginal increase in productivity as a function of training alone, may be misleading. A major assumption was made that each individual's incremental earnings as a result of training would remain constant for his entire working life.

Tables 2 to 13 show the present values for different time periods for each of the programmes using discount rates of 4%, 10%, and 14%. Also presented in these tables are the mean costs per student day for each of the programmes, mean annual earnings before training, mean earnings after training, and marginal benefits (incremental earnings). The methodology used for the calculations was discussed in Chapter III. Column one in each of the tables indicates the probable length of the payoff period in years.

At the bottom of each of the tables different internal rates of return, that is the discount rates at which discounted benefits are just equal to discounted costs, are shown for different periods of assumed service lives following training.

Two tables have been constructed for each of the training programmes. One table presents the findings for the trainees who completed their programmes and the other table presents the findings for the trainees who terminated before completing their programmes.

Business Education Programme

Table 2 shows that the mean cost of the training programme for those who completed the programme was $4,928, the mean annual earnings before training were $4,819 and the mean annual earnings after training were $5,959, the difference between the two annual earnings being the marginal benefits which amount to $1,140. At a 4% discount rate the benefit would outweigh the costs between 4 and 5 years, at 10% it would take between 5 and 6 years, and at 14% between 7 and 8 years.

The internal rates of return are 19.1% for the service life of 10 years, 22.7% for 20 years, 23.1% for 30 years and 23.1% for 40 years.

Table 3 shows that mean cost for those who terminated their programme before completion was $4,318, the mean annual earnings after training were $5,517, increasing marginal benefits being $1,212. The benefits outweigh the costs between 3 and 4 years, at the discount rate of 4%, between 4 and 5 years at 10%, and between 5 and 6 years at 14%.

As shown in table 3 the internal rates of return are higher for the individuals who terminated before completion than those for the trainees who completed the programme. For 10 years the internal rate of return is 25.1%, for 20 years it is 27.9%, for 30 years it is 28%, and it is also 28% for 40 years.

TABLE 2

SOCIAL PRESENT VALUES AND INTERNAL RATES OF RETURN IN 1973 DOLLARS

FOR TRAINEES WHO COMPLETED THE BUSINESS EDUCATION PROGRAMME

(a) Interest Rate	(b) Time in Years	(c) Social Present Values	(d) Mean Cost	(e) Mean Earnings Before Training	(f) Mean Earnings After Training	(g) Marginal Benefit	(h) Break-even Point (yrs.)
4%	10 yrs.	4,318					
	20 yrs.	10,564	4,928	4,819	5,959	1,140	4 - 5
	30 yrs.	14,784					
	40 yrs.	17,635					
10%	10 yrs.	2,076					
	20 yrs.	4,777	4,928	4,819	5,959	1,140	5 - 6
	30 yrs.	5,818					
	40 yrs.	6,219					
14%	10 yrs.	1,018					
	20 yrs.	2,622					
	30 yrs.	3,054	4,928	4,819	5,959	1,140	7 - 8
	40 yrs.	3,171					

Internal Rate of Return	10 yrs.	19.1%
	20 yrs.	22.7%
	30 yrs.	23.1%
	40 yrs.	23.1%

N = 32

TABLE 3

SOCIAL PRESENT VALUES AND INTERNAL RATES OF RETURN IN 1973 DOLLARS FOR TRAINEES WHO TERMINATED THE BUSINESS EDUCATION PROGRAMME BEFORE COMPLETION

(a) Interest Rate	(b) Time in Years	(c) Social Present Values	(d) Mean Cost	(e) Mean Earnings Before Training	(f) Mean Earnings After Training	(g) Marginal Benefit	(h) Break-even Point (yrs.)
4%	10 yrs.	5,509					
	20 yrs.	12,149					
			4,318	4,305	5,517	1,211	3 - 4
	30 yrs.	16,635					
	40 yrs.	19,665					
10%	10 yrs.	3,127					
	20 yrs.	5,997					
			4,318	4,305	5,517	1,211	4 - 5
	30 yrs.	7,104					
	40 yrs.	7,531					
14%	10 yrs.	2,001					
	20 yrs.	3,707					
			4,318	4,305	5,517	1,211	5 - 6
	30 yrs.	4,166					
	40 yrs.	4,290					

Internal Rate of Return	10 yrs.	25.1%	N = 10
	20 yrs.	27.9%	
	30 yrs.	28.0%	
	40 yrs.	28.1%	

The social present values for the trainees who terminated before completion of their programme is higher than the social present values for the trainees who completed the programme. For a 40 year service life and a 4% discount rate the value is $19,665 for those who terminated as compared to $17,635 for those who completed; at the 10% discount rate it is $7,531 as compared to $6,219; and at the 14% discount rate the social present value is $4,290 as compared to $3,171. In this case the function of high present values among the trainees who terminated their programmes was the low cost of the training programme involved. The mean cost for the trainees who completed their programme was $4,928 while those who terminated their programme had a mean cost of $4,318. The difference in cost was $610 while the difference between the before and after training earnings was only $70 per year.

Nursing Orderly Programme

Table 4 shows that the trainees who completed their programme in the nursing orderly programme had social present values as follows: $1,807 for 10 years, $9,644 for 20 years, $14,938 for 30 years and $18,514 for 40 years all at 4% discount rate. At the discount rate of 10% the social present values are $1,004, $2,383, $3,690, and $4,193 for 10, 20, 30 and 40 years respectively. When the rate of discount is increased to 14% the present values are -$2332, -$319, $223, and $369 for 10, 20, 30 and 40 years respectively. The mean cost was $9,791; the mean yearly earnings before training were

TABLE 4

SOCIAL PRESENT VALUES AND INTERNAL RATES OF RETURN IN 1973 DOLLARS

FOR THE TRAINEES WHO COMPLETED THE NURSING ORDERLY PROGRAMME

(a) Interest Rate	(b) Time in Years	(c) Social Present Values	(d) Mean Cost	(e) Mean Earnings Before Training	(f) Mean Earnings After Training	(g) Marginal Benefit	(h) Break-even Point (yrs.)
4%	10 yrs.	1,807					
	20 yrs.	9,644					
			9,791	6,193	7,623	1,430	8 - 9
	30 yrs.	14,938					
	40 yrs.	18,514					
10%	10 yrs.	1,004					
	20 yrs.	2,383					
			9,791	6,193	7,623	1,430	13 - 14
	30 yrs.	3,690					
	40 yrs.	4,193					
14%	10 yrs.	2,332					
	20 yrs.	-319					
			9,791	6,193	7,623	1,430	25 - 26
	30 yrs.	223					
	40 yrs.	369					

Internal Rate of Return	10 yrs.	7.6%	N = 7
	20 yrs.	13.4%	
	30 yrs.	14.3%	
	40 yrs.	14.5%	

$6,193, and increased by $1,430 to $7,623 per annum after training. Discounted at 4% the social benefits outweigh the costs between 8 and 9 years; they outweigh the costs between 13 and 14 years at 10% and at 14% benefits outweigh costs between 25 and 26 years.

The internal rates of return for different service lives are 7.6% for 10 years, 13.4% for 20 years, 14.3% for 30 years and 14.5% for 40 years.

Table 5 presents similar information for the nursing orderly (terminated) programme. The internal rates of return for different time periods are much higher than those presented in Table 4 for the nursing orderly (completed) programme. The internal rates of return are 16.1% for 10 years, 30.8% for 20 years, 20.7% for 30 years and 20.8% for 40 years. The social present values at different discount rates are $4,256 for 10 years, $11,332 for 20 years, $16,112 for 30 years, $19,341 for 40 years, all at the discount rate of 4%; $1,717 for 10 years, $4.776 for 20 years, $5,956 for 30 years and $6,410 for 40 years, all at the discount rate of 10%. At the discount rate of 14% the social present values are $518 for 10 years, $2,335 for 20 years, $2,825 for 30 years and $2,958 for 40 years. The mean cost was $6,216. The mean annual earnings before training were $4,411 and $5,702 after the training. The marginal social benefits were $1,291. Social benefits outweigh social costs between 5 and 6 years at 4% discount rate, between 6 and 7 years at 10%, and 8 to 9

TABLE 5

SOCIAL PRESENT VALUES AND INTERNAL RATES OF RETURN IN 1973 DOLLARS FOR THE TRAINEES WHO TERMINATED THEIR NURSING ORDERLY PROGRAMME BEFORE COMPLETION

(a) Interest Rate	(b) Time in Years	(c) Social Present Values	(d) Mean Cost	(e) Mean Earnings Before Training	(f) Mean Earnings After Training	(g) Marginal Benefit	(h) Break-even Point (yrs.)
4%	10 yrs.	4,256					
	20 yrs.	11,332					
			6,216	4,411	5,702	1,291	5 - 6
	30 yrs.	16,112					
	40 yrs.	19,341					
10%	10 yrs.	1,717					
	20 yrs.	4,776					
			6,216	4,411	5,702	1,291	6 - 7
	30 yrs.	5,956					
	40 yrs.	6,410					
14%	10 yrs.	518					
	20 yrs.	2,335					
			6,216	4,411	5,702	1,291	8 - 9
	30 yrs.	2,825					
	40 yrs.	2,958					

Internal Rates of Return	10 yrs.	16.1%	N = 9
	20 yrs.	20.3%	
	30 yrs.	20.7%	
	40 yrs.	20.8%	

at the discount rate of 14%. The internal rate of return is 16.1% for 10 years, 20.3% for 20 years, 20.7% for 30 years and 20.8% for 40 years.

In this programme, as was the case for the Business Education programme, the trainees who terminated had higher rates of return than did those who completed their programme. The higher rates of return were due to low cost. The training cost for the trainees who completed the programme was $9,791 as compared to the training cost of $6,216 for the trainees who did not complete the programme.

Family Aid Programme

Table 6 presents the information for the Family Aid Programme (completed). At a 4% discount rate the social present values are $1,225, $4,952, $7,470 and $9,171 for the time periods of 10, 20, 30 and 40 years, respectively. At a 10% discount rate the social present values are -$111, $1,499, $2,120, $2,360 for time periods of 10, 20, 30 and 40 years, respectively. At a 14% discount rate the social present values are -$743, $213, $472 and $541 for the time periods of 10, 20, 30 and 40 years. The mean social cost incurred in this programme was $4,290, the mean annual before and after training earnings were $3,684 and $4,364 respectively. The marginal benefits were $680. At a 4% discount rate the benefits outweigh the costs between 7 and 8 years, between 10 and 11 years at 10% rate of discount and between 17 and 18 years at 14% rate of discount.

TABLE 6

SOCIAL PRESENT VALUES AND INTERNAL RATES OF RETURN IN 1973 DOLLARS

FOR THE TRAINEES WHO COMPLETED THE FAMILY AID PROGRAMME

(a) Interest Rate	(b) Time in Years	(c) Social Present Values	(d) Mean Cost	(e) Mean Earnings Before Training	(f) Mean Earnings After Training	(g) Marginal Benefit	(h) Break-even Point (yrs.)
4%	10 yrs.	1,225					
	20 yrs.	4,952					
			4,290	3,684	4,364	680	7 - 8
	30 yrs.	7,470					
	40 yrs.	9,171					
10%	10 yrs.	-111					
	20 yrs.	1,499					
			4,290	3,684	4,364	680	10 - 11
	30 yrs.	2,120					
	40 yrs.	2,360					
14%	10 yrs.	-743					
	20 yrs.	213					
			4,290	3,684	4,364	680	17 - 18
	30 yrs.	472					
	40 yrs.	541					

Internal Rates of Return	10 yrs.	9.4%	N = 8
	20 yrs.	14.9%	
	30 yrs.	15.6%	
	40 yrs.	15.8%	

The internal rates of return for different time periods are 9.4% for 10 years, 14.9% for 20 years, 15.6% for 30 years and 15.6% for 40 years.

Table 7 presents information for the Family Aid (terminated) Programme. The mean social cost was $5,838 and the mean annual earnings before training were $5,496, dropping to $4,623 after training. The marginal social loss was -$872. Negative rates of return for the trainees who terminated their programme were a function of both the high cost of the programme and, especially of the lower annual earnings after training than before. Thus, there are negative present values.

High School Programme

Table 8 presents information for the High School (completed) Programme. The mean cost was $5,796, mean before training earnings were $5,739 and mean annual after training earnings were $6,842. The marginal social benefits were $1,102. Benefits outweigh costs between 6 and 7 years at a discount rate of 4%, between 7 to 8 years at 10% and between 10 and 11 years at 14%. The present values of benefits at a 4% discount rate are $3,144 for 10 years, $9,183 for 20 years, $13,265 for 30 years, and $16,021 for 40 years. At a 10% discount rate the present values are $977 for 10 years, $3,588 for 20 years, $4,595 for 30 years, and $4,983 for 40 years. At a 14% discount rate the present values are -$46 for 10 years, $1,504 for 20 years, $1,922 for 30 years,

TABLE 7

SOCIAL PRESENT VALUES AND INTERNAL RATES OF RETURN IN 1973 DOLLARS

FOR THE TRAINEES WHO TERMINATED THEIR FAMILY AID PROGRAMME

(a) Interest Rate	(b) Time in Years	(c) Social Present Values	(d) Mean Cost	(e) Mean Earnings Before Training	(f) Mean Earnings After Training	(g) Marginal Benefit	(h) Break-even Point (yrs.)
4%	10 yrs.	-12,915					
	20 yrs.	-17,695					
			5,838	5,496	4,623	-872	
	30 yrs.	-20,925					
	40 yrs.	-23,107					
10%	10 yrs.	-11,199					
	20 yrs.	-13,277					
			5,838	5,496	4,623	-872	
	30 yrs.	-14,063					
	40 yrs.	-14,370					
14%	10 yrs.	-10,389					
	20 yrs.	-11,616					
			5,838	5,496	4,623	-872	
	30 yrs.	-11,948					
	40 yrs.	-12,037					
Internal Rates of Return		Nil	N = 9				

TABLE 8

SOCIAL PRESENT VALUES AND INTERNAL RATES OF RETURN IN 1973 DOLLARS

FOR THE TRAINEES WHO COMPLETED THE HIGH SCHOOL PROGRAMME

(a) Interest Rate	(b) Time in Years	(c) Social Present Values	(d) Mean Cost	(e) Mean Earnings Before Training	(f) Mean Earnings After Training	(g) Marginal Benefit	(h) Break-even Point (yrs.)
4%	10 yrs.	3,144					
	20 yrs.	9,184	5,796	5,739	6,842	1,102	6 - 7
	30 yrs.	13,265					
	40 yrs.	16,021					
10%	10 yrs.	977					
	20 yrs.	3,588	5,796	5,739	6,842	1,102	7 - 8
	30 yrs.	4,595					
	40 yrs.	4,983					
14%	10 yrs.	-46					
	20 yrs.	1,504	5,796	5,739	6,842	1,102	10 - 11
	30 yrs.	1,922					
	40 yrs.	2,035					

Internal Rates of Return	10 yrs.	13.8%	N = 64
	20 yrs.	18.4%	
	30 yrs.	18.9%	
	40 yrs.	19.0%	

and $2,035 for 40 years.

The internal rates of return are 14.8% for a 10 year time period, 18.4% for 20 years, 18.9% for 30 years and 19.0% for 40 years.

Table 9 presents information for the High School (terminated) Programme. The mean cost was $5,236, the mean earnings before training were $5,094 and increased to $7,435 after training, giving $2,341 as the social marginal benefits. At a 4% discount rate the social present values ranged from $13,754 for 10 years to $14,105 for 40 years. At a 10% discount rate the social present value was $9,150 for 10 years and $17,660 for 40 years. At a 14% discount rate the social present values ranged from $6,976 for 10 years to $11,399 for 40 years. The benefits outweigh costs between 2 and 3 years for all three discount rates.

The rates of return are 43.5% for 10 years, 44.7% for 20, 30 and 40 years of working life. Both the present values and the internal rate of return among the trainees who terminated their programme were higher than for the trainees who completed the programme. The main reason was that there was a greater increase of after training annual earnings among the trainees who did not complete the programme.

Basic Academic Programme

Table 10 shows different information for the Basic Academic (completed) Programme. Benefits outweigh costs between 2 and 3 years at the three selected discount rates.

TABLE 9

SOCIAL PRESENT VALUES AND INTERNAL RATES OF RETURN IN 1973 DOLLARS

FOR THE TRAINEES WHO TERMINATED THEIR HIGH SCHOOL PROGRAMME

(a) Interest Rate	(b) Time in Years	(c) Social Present Values	(d) Mean Cost	(e) Mean Earnings Before Training	(f) Mean Earnings After Training	(g) Marginal Benefit	(h) Break-even Point (yrs.)
4%	10 yrs.	13,754					
	20 yrs.	26,583					
			5,236	5,094	7,435	2,341	2 - 3
	30 yrs.	35,250					
	40 yrs.	41,105					
10%	10 yrs.	9,150					
	20 yrs.	14,697					
			5,236	5,094	7,435	2,341	2 - 3
	30 yrs.	16,835					
	40 yrs.	17,660					
14%	10 yrs.	6,976					
	20 yrs.	10,270					
			5,236	5,094	7,435	2,341	2 - 3
	30 yrs.	11,159					
	40 yrs.	11,399					

Internal Rates of Return	10 yrs.	43.5%	N = 14
	20 yrs.	44.7%	
	30 yrs.	44.7%	
	40 yrs.	44.7%	

TABLE 10

SOCIAL PRESENT VALUES AND INTERNAL RATES OF RETURN IN 1973 DOLLARS

FOR THE TRAINEES WHO COMPLETED THE ACADEMIC BASIC PROGRAMME

(a) Interest Rate	(b) Time in Years	(c) Social Present Values	(d) Mean Cost	(e) Mean Earnings Before Training	(f) Mean Earnings After Training	(g) Marginal Benefit	(h) Break-even Point (yrs.)
4%	10 yrs.	20,192					
	20 yrs.	37,611					
			5,592	5,651	8,830	3,179	2 - 3
	30 yrs.	49,379					
	40 yrs.	57,329					
10%	10 yrs.	13,941					
	20 yrs.	21,472					
			5,592	5,651	8,830	3,179	2 - 3
	30 yrs.	24,375					
	40 yrs.	25,495					
14%	10 yrs.	10,989					
	20 yrs.	15,462					
			5,592	5,651	8,830	3,179	2 - 3
	30 yrs.	16,669					
	40 yrs.	16,994					

Internal Rates of Return	10 yrs.	56.2%	N = 15
	20 yrs.	56.8%	
	30 yrs.	56.8%	
	40 yrs.	56.8%	

The mean cost was $5,592, the mean annual earnings were $5,651 and $8,830 before and after training respectively. The marginal social benefits were $3,179.

The social present values ranged from $20,192 for 10 years to $57,329 for 40 years at a 4% discount rate, from $1,394 for 10 years to $25,495 for 40 years at 10% discount rate and from $10,989 to $16,994 for 10 and 40 years respectively at a 14% discount rate.

The rates of return for different time periods are 56.2% for 10 years and 56.8% for 20, 30 and 40 years.

Table 11 presents the mean cost of $7,295 for the trainees who terminated their Basic Academic Programme. The mean before and after training earnings were $7,064 and $7,954 respectively and the marginal social benefits were $889. The social present values ranged from -$70 for 10 years to $10,320 for 40 years at the discount rate of 4%, from -$1,189 for 10 years to $1,431 for 40 years at the discount rate of 10%, and at the discount rate of 14% the present values were -$2,045 for 10 years and -$965 for 40 years. At a 4% discount rate the benefits outweigh the costs between 9 and 10 years and at 10% they do so between 18 and 19 years; at a 14% discount rate the benefits do not outweigh costs within 40 years of working life.

The rates of return for different time periods are 3.8% for 10 years, 10.6% for 20 years, 11.8% for 30 years and 12.1% for 40 years.

TABLE 11

SOCIAL PRESENT VALUES AND INTERNAL RATES OF RETURN IN 1973 DOLLARS

FOR THE TRAINEES WHO TERMINATED THEIR ACADEMIC BASIC PROGRAMME

(a) Interest Rate	(b) Time in Years	(c) Social Present Values	(d) Mean Cost	(e) Mean Earnings Before Training	(f) Mean Earnings After Training	(g) Marginal Benefit	(h) Break-even Point (yrs.)
4%	10 yrs.	-70					
	20 yrs.	4,803					
			7,285	7,064	7,954	889	10 - 11
	30 yrs.	8,096					
	40 yrs.	10,320					
10%	10 yrs.	-1,819					
	20 yrs.	287					
			7,285	7,064	7,954	889	18 - 19
	30 yrs.	1,099					
	40 yrs.	1,413					
14%	10 yrs.	-2,045					
	20 yrs.	-1,394					
			7,285	7,064	7,954	889	Not Within 40 yrs.
	30 yrs.	-1,056					
	40 yrs.	- 965					

Internal Rates of Return	10 yrs.	3.8%	N = 20
	20 yrs.	10.6%	
	30 yrs.	11.8%	
	40 yrs.	12.1%	

Custodial Programme

Table 12 shows a mean cost of $5,865 for the Custodial (completed) Programme; the mean annual earnings before and after training of $5,264 and $6,805 respectively. The marginal social benefits were $1,540. The benefits outweigh costs between 4 and 5 years at a 4% discount rate, and between 5 and 6 years at a 10% and a 14% discount rate.

The social present values at a 4% discount rate are $6,631 for 10 years, $15,073 for 20 years, $20,776 for 30 years, $24,629 for 40 years. At the discount rate of 10% they are $3,601 for 10 years, $7,251 for 20 years, $8,658 for 30 years and $9,201 for 40 years. At the discount rate of 14% they are $2,171 for 10 years, $4,339 for 20 years, $4,923 for 30 years and $5,081 for 40 years.

The internal rates of return for the different time periods ranged from 22.9% for 10 years, 26.0% for 20 years, 26.2% for 30 years and 26.3% for 40 years.

Table 13 presents the mean cost of $6,962 for the trainees who terminated their Basic Academic Programme. The mean annual earnings after training were $6,265, hence the costs outweighed the benefits by $373.

The social present values at different discount rates were all negative. For example, at a 4% rate they ranged from -$9,988 for 10 years to -$14,345 for 40 years; at a 10% rate the range was from -$9,254 to -$10,610 for 10 years and 40 years respectively and at a 14% rate the range was

TABLE 12

SOCIAL PRESENT VALUES AND INTERNAL RATES OF RETURN IN 1973 DOLLARS FOR THE TRAINEES WHO COMPLETED THE CUSTODIAL PROGRAMME

Interest Rate	Time in Years	Social Present Values	Mean Cost	Mean Earnings Before Training	Mean Earnings After Training	Marginal Benefit	Break-even Point (yrs.)
4%	10 yrs.	6,631					
	20 yrs.	15,073					
	30 yrs.	20,776	5,865	5,264	6,805	1,540	4 - 5
	40 yrs.	24,629					
10%	10 yrs.	3,601					
	20 yrs.	7,251					
	30 yrs.	8,658					
	40 yrs.	9,201	5,865	5,264	6,805	1,540	5 - 6
14%	10 yrs.	2,171					
	20 yrs.	4,339					
	30 yrs.	4,923	5,865	5,264	6,805	1,540	5 - 6
	40 yrs.	5,081					

Internal Rates of Return	10 yrs.	22.9%	N = 12
	20 yrs.	26.0%	
	30 yrs.	26.2%	
	40 yrs.	26.3%	

TABLE 13

SOCIAL PRESENT VALUES AND INTERNAL RATES OF RETURN IN 1973 DOLLARS

FOR THE TRAINEES WHO TERMINATED THEIR CUSTODIAL PROGRAMME

(a) Interest Rate	(b) Time in Years	(c) Social Present Values	(d) Mean Cost	(e) Mean Earnings Before Training	(f) Mean Earnings After Training	(g) Marginal Benefit	(h) Break-even Point (yrs.)
4%	10 yrs.	-9,988					
	20 yrs.	-12,031					
			6,962	6,638	6,265	-373	
	30 yrs.	-13,412					
	40 yrs.	-14,345					
10%	10 yrs.	-9,254					
	20 yrs.	-10,138					
			6,962	6,638	6,265	-373	
	30 yrs.	-10,478					
	40 yrs.	-10,610					
14%	10 yrs.	-8,908					
	20 yrs.	-9,433					
			6,962	6,638	6,265	-373	
	30 yrs.	-9,574					
	40 yrs.	-9,612					

Internal Rates of Return Nil N = 3

from -$8,908 for a time period of 10 years to -$9,612 for a time period of 40 years. As mentioned above there were no break-even points because the costs outweighed the benefits.

SUMMARY AND DISCUSSION OF SOCIAL PRESENT VALUES AND SOCIAL INTERNAL RATES OF RETURN

Summary

Table 14 summarizes the results of social present values and social internal rates of return for all the programmes.

The overall results are that the average gross earnings before training were $5,434, and $6,658 after training. The weighted average cost of operating all programmes was $5,884. The gross marginal benefits were $1,223. The overall gross present value was $4,533. The social internal rate of return was 20.3%.

Overall the Basic Skill Development (High School and Basic Academic) tended to have greater social present values and higher social internal rates of return than the occupationally oriented programmes (Business Education, Custodial, Family Aid and Nursing Orderly).

All the trainees who completed the training programmes had greater than zero social present values and social internal rates of return. Social present values ranged from $287 for the Basic Academic (terminated) to $21,472 for the Basic Academic (completed) at 10% discount rate. The social

TABLE 14

COMPARATIVE SOCIAL PRESENT VALUES (20-YEAR PERIOD) AND COMPARATIVE SOCIAL INTERNAL RATES OF RETURN BY PROGRAMME

Training Programme	Present Value Using a 10% Interest Rate	Pay-Off Period	Internal Rates of Return
1. Business Education (completed)	$4,777	5 to 6 yrs.	22.7%
2. Business Education (terminated)	$5,997	4 to 5 yrs.	27.9%
3. Nursing Orderly (completed)	$2,383	13 to 14 yrs.	13.4%
4. Nursing Orderly (terminated)	$4,776	6 to 7 yrs.	20.3%
5. Family Aid (completed)	$1,499	10 to 11 yrs.	14.9%
6. Family Aid (terminated)	-$13,277	N/A	N/A
7. High School (completed)	$3,588	7 to 8 yrs.	18.4%
8. High School (terminated)	$14,699	2 to 3 yrs.	44.7%
9. Academic Basic (completed)	$21,472	2 to 3 yrs.	56.8%
10. Academic Basic (terminated)	$ 287	18 to 19 yrs.	10.6%
11. Custodial (completed)	$7,251	5 to 6 yrs.	26.0%
12. Custodial (terminated)	-$10,138	N/A	N/A

internal rate of return ranged from 10.6% to 56.8% for the above two groups of trainees. Shorter pay-off periods were observed among the High School (terminated) and Basic Academic (completed).

There were negative social present values for the trainees who terminated their Custodial and Family Aid programmes.

Discussion

The computation of social cost included both the foregone productivity, and the operational and capital costs. The later category accounted for only 7% of the total social cost. It is conceivable therefore that the differences in the social present values and the social internal rates of return among the programmes were a function of the foregone productivity included in the social cost component. Foregone productivity measured by the foregone earnings method did not necessarily depend on the time an individual spent in a training programme but rather on the amount of earnings received by the individual before entering the training programme.

Another factor accounting for the differences in the social present values and the social internal rates of return was the fact that after training earnings differed among programmes. The greater the after training earnings the greater the social marginal benefits.

Negative social present values and internal rates of return among the trainees who terminated their Custodial and Family Aid programmes may be attributable to lower after training earnings than before training earnings and also to social costs as a function of foregone productivity.

CHAPTER V

RESULTS OF THE STUDY: PRIVATE BENEFITS

The procedures followed in calculating the social benefits in Chapter IV were repeated to determine private benefits, except that earnings net of taxes were considered on the benefit side and only costs borne by individuals were considered on the cost side. For the computation of training programme cost, foregone earnings were likewise based on earnings, net of taxes, before attending the training programme. The individuals who were not productively engaged for a year prior to training were assigned the average programme foregone earnings. For individuals who did not work before but were entitled to welfare payments, the net earnings foregone were assumed to be equivalent to welfare payments foregone because it was assumed that such individuals would otherwise have continued to receive welfare payments during the entire time they were in training.

Net private benefits were derived by subtracting taxes from gross earnings after training. No after-training welfare recipients were included in the calculations. To take into consideration changes in welfare payments would be a misleading measure of private benefits of training. If an individual had been on welfare before training at the rate of $4,000 per year and after training the same individual

received $4,500 welfare payments, the increase of $500 would be included in the calculations of present values and the internal rates of return. Obviously such changes in welfare payments are likely to have nothing to do with training.

Another calculation of private returns included the allowances paid by various sponsoring agents. The allowances were considered as inducements, and therefore should be added on to the benefit side from the private point of view. The calculations were intended to determine the effects of such allowances.

Two tables for each of the training programmes, according to whether the trainees completed or terminated their programmes, are presented; the first table presents figures for the calculations leaving out the allowances, and the second table presents figures which include the allowances. The tables show the mean private cost, the mean before training net nearly earnings, the mean after training net yearly earnings and the net yearly marginal benefits. The pay-off period is also shown. Discounted present values and the internal rates of return for a service life of 20 years are discussed even though the tables show present values and internal rates of return for 10, 20, 30 and 40 service lives.

Business Education (completed). Table 15 shows that at a discount rate of 4% the private benefits outweigh private costs between the second and third year after completion of

TABLE 15

PRIVATE PRESENT VALUES AND PRIVATE INTERNAL RATES OF RETURN, WITH ALLOWANCES EXCLUDED, IN 1973 DOLLARS FOR THE TRAINEES WHO COMPLETED THEIR BUSINESS EDUCATION PROGRAMME

Interest Rate	Time in Years	Present Value	Mean Cost	Mean Before Training Net Earnings	Mean After Training Net Earnings	Marginal Benefits or Loss	Pay-Off Period (yrs) Between
4%	10 yrs.	4,995					
	20 yrs.	1,089					
			4,025	4,025	5,137	1,112	3 and 4
	30 yrs.	15,206					
	40 yrs.	17,987					
10%	10 yrs.	2,808					
	20 yrs.	5,443					
			4,025	4,025	5,137	1,112	4 and 5
	30 yrs.	6,458					
	40 yrs.	6,850					
14%	10 yrs.	1,775					
	20 yrs.	3,340					
			4,025	4,025	5,137		5 and 6
	30 yrs.	3,762					
	40 yrs.	3,876					

Internal Rates of Return After	10 yrs.	24.6%	N = 32
	20 yrs.	27.4%	
	30 yrs.	27.6%	
	40 yrs.	27.6%	

the training programme in Business Education between four and five years at 10% rate of discount and between the fifth and sixth year at a 14% rate of discount. The mean after training net earnings were $5,137. The mean cost was $4,025. The net marginal benefits were $1,112.

At a 4% discount rate the private present values after 20 years were $1,089, $5,443 at 10% and $3,340 at 14% discount rate. The rate of return after 20 years was 27.4%.

Table 16 shows the findings of the analysis with the allowances included. At the discount rate of 4% the benefits outweigh the costs between 3 and 4 years, and also between the 3 and 4 years at 10% and 14% discount rates.

The mean cost was $2,457. The net marginal benefits were $1,112. At a 4% discount rate the present value for 20 years was $12, 657, $7,011 at a 10% discount rate, and $4,908 at a 14% discount rate. For 20 years the internal rate of return was 45.3%.

Business Education (terminated). Table 17 shows that at 4% and 10% discount rates the private benefits outweigh the private costs between the second and third year, between the third and fourth year at a 14% discount rate. The mean cost was $3,561. The after training earnings were $5,001.

The net marginal benefits were $1,440. At a 4% discount rate the private present values were $16,018, $8,704

TABLE 16

PRIVATE PRESENT VALUES AND PRIVATE INTERNAL RATES OF RETURN, WITH ALLOWANCES INCLUDED, IN 1973 DOLLARS FOR THE TRAINEES WHO COMPLETED THEIR BUSINESS EDUCATION PROGRAMME

Interest Rate	Time in Years	Present Value	Mean Cost	Mean Before Training Net Earnings	Mean After Training Net Earnings	Marginal Benefits Or Loss	Pay-Off Period (yrs) Between
4%	10 yrs.	6,563					
	20 yrs.	12,657					
			2,457	4,025	5,137	1,112	3 and 4
	30 yrs.	16,774					
	40 yrs.	19,555					
10%	10 yrs.	4,376					
	20 yrs.	7,011					
			2,457	4,025	5,137	1,112	3 and 4
	30 yrs.	8,027					
	40 yrs.	8,418					
14%	10 yrs.	3,348					
	20 yrs.	4,908					
			2,457		5,137	1,112	3 and 4
	30 yrs.	5,330					
	40 yrs.	5,444					

Internal Rates of Return After	10 yrs.	44.1%	N = 32
	20 yrs.	45.2%	
	30 yrs.	45.3%	
	40 yrs.	45.3%	

TABLE 17

PRIVATE PRESENT VALUES AND PRIVATE INTERNAL RATES OF RETURN, WITH ALLOWANCES EXCLUDED, IN 1973 DOLLARS FOR THE TRAINEES WHO TERMINATED THEIR BUSINESS EDUCATION PROGRAMME

Interest Rate	Time in Years	Present Value	Mean Cost	Mean Before Training Net Earnings	Mean After Training Net Earnings	Marginal Benefits Or Loss	Pay-Off Period (yrs) Between
4%	10 yrs.	8,124					
	20 yrs.	16,018					
			3,561	3,561	5,001	1,440	2 and 3
	30 yrs.	21,351					
	40 yrs.	24,954					
10%	10 yrs.	5,291					
	20 yrs.	8,704					
			3,561	3,561	5,001	1,440	2 and 3
	30 yrs.	10,020					
	40 yrs.	10,527					
14%	10 yrs.	3,953					
	20 yrs.	5,980					
			3,561	3,561	5,001	1,440	3 and 4
	30 yrs.	6,527					
	40 yrs.	6,675					

Internal Rates of Return After	10 yrs.	38.9%	N = 10
	20 yrs.	40.4%	
	30 yrs.	40.5%	
	40 yrs.	40.5%	

at 10% and $6,675 at 14% discount rate, all three calculated for 20 years. The internal rate of return was 40.4%.

Table 18 shows that the net benefits outweigh net costs between 2 and 3 years at 4% and between 3 and 4 years at 10% and 14% discount rates because of the allowances included. The mean cost was $2,566. The after training net earnings were $5,001. The net marginal benefits were $1,440. The private present value at 20 years were: $17,012 at a 4%, $9,698 at a 10%, and $6,975 at a 14% discount rate calculated for twenty years. The internal rate of return for 20 years was 56.1%.

Nursing Orderly (completed). Table 19 shows that without allowances at the discount rate of 4% private benefits outweigh private costs between the seventh and eighth year after completion of the training programme between the ninth and tenth year at a 10% and between the fourteenth and fifteenth year at 14% discount rate. The mean cost was $5,406. The after training net earnings were $6,291. The net marginal benefits amount to $884. The present values were $6,612, $2,122 and $450 at 4%, 10% and 14% discount rates. The internal rate of return for 20 years was 15.4%.

Table 20 shows that with the addition of the allowances, the benefits outweigh the costs between 4 and 5 years at a 4% rate, between 6 and 7 years at a 10% rate and between 6 and 7 years at 14% rate of discount. The mean cost was $3,072. The net marginal benefits were $884. The present

TABLE 18

PRIVATE PRESENT VALUES AND PRIVATE INTERNAL RATES OF RETURN, WITH ALLOWANCES INCLUDED, IN 1973 DOLLARS FOR THE TRAINEES WHO TERMINATED THEIR BUSINESS EDUCATION PROGRAMME

Interest Rate	Time in Years	Present Value	Mean Cost	Mean Before Training Net Earnings	Mean After Training Net Earnings	Marginal Benefits Or Loss	Pay-Off Period (yrs) Between
4%	10 yrs.	9,118					
	20 yrs.	17,012					
			2,566	3,561	5,001	1,440	2 and 3
	30 yrs.	22,345					
	40 yrs.	25,948					
10%	10 yrs.	6,285					
	20 yrs.	9,698					
			2,566	3,561	5,001	1,440	3 and 4
	30 yrs.	11,014					
	40 yrs.	11,522					
14%	10 yrs.	4,948					
	20 yrs.	6,975					
			2,566	3,561	5,001	1,440	3 and 4
	30 yrs.	7,522					
	40 yrs.	7,669					

Internal Rate of Return After	10 yrs.	55.5%	N = 10
	20 yrs.	56.1%	
	30 yrs.	56.1%	
	40 yrs.	56.1%	

TABLE 19

PRIVATE PRESENT VALUES AND PRIVATE INTERNAL RATES OF RETURN, WITH ALLOWANCES EXCLUDED, IN 1973 DOLLARS FOR TRAINEES WHO COMPLETED THEIR NURSING ORDERLY PROGRAMME

Interest Rate	Time in Years	Present Value	Mean Cost	Mean Before Training Net Earnings	Mean After Training Net Earnings	Marginal Benefits Or Loss	Pay-Off Period (yrs) Between
4%	10 yrs.	1,766					
	20 yrs.	6,612					
			5,406	5,406	6,291	884	7 and 8
	30 yrs.	9,885					
	40 yrs.	12,097					
10%	10 yrs.	27					
	20 yrs.	2,122					
			5,406	5,406	6,291	884	9 and 10
	30 yrs.	2,930					
	40 yrs.	3,241					
14%	10 yrs.	-793					
	20 yrs.	450					
			5,406	5,406	6,291	884	14 and 15
	30 yrs.	786					
	40 yrs.	676					

Internal Rates of Return After	10 yrs.	10.1%	N = 7
	20 yrs.	15.4%	
	30 yrs.	16.2%	
	40 yrs.	16.3%	

TABLE 20

PRIVATE PRESENT VALUES AND PRIVATE INTERNAL RATES OF RETURN, WITH ALLOWANCES INCLUDED, IN 1973 DOLLARS FOR TRAINEES WHO COMPLETED THEIR NURSING ORDERLY PROGRAMME

Interest Rate	Time in Years	Present Value	Mean Cost	Mean Before Training Net Earnings	Mean After Training Net Earnings	Marginal Benefits Or Loss	Pay-Off Period (yrs) Between
4%	10 yrs.	4,100					
	20 yrs.	8,946					
			3,072	5,406	6,291	884	4 and 5
	30 yrs.	12,220					
	40 yrs.	14,431					
10%	10 yrs.	2,361					
	20 yrs.	4,456					
			3,072	5,406	6,291	884	5 and 6
	30 yrs.	5,264					
	40 yrs.	5,575					
14%	10 yrs.	1,540					
	20 yrs.	2,784					
			3,072	5,406	6,291	884	6 and 7
	30 yrs.	3,420					
	40 yrs.	3,211					

Internal Rates of Return After	10 yrs.	25.9%	N = 7
	20 yrs.	22.6%	
	30 yrs.	28.8%	
	40 yrs.	28.8%	

values shown were $8,946 at a 4% rate, $2,161 at a 10% and $2,784 at a 14% discount rate. The internal rate of return for 20 years was 28.6%.

Nursing Orderly (terminated). Table 21 shows that without allowances included in the calculations the mean cost was $40,017. The net internal benefits were $119. At the discount rate of 4% the benefits outweigh the costs between eight and nine years, between ten and eleven years at a 10% and between fourteen and fifteen yeara at a 14% rate. The internal rate of return for 20 years was 22.5%.

Table 22 presents similar information as that presented in table 21 except that this time allowances were included. At all three discount rates, 4%, 10$ and 14%, the benefits outweigh the costs between 4 and 5, 5 and 6, and 6 and 6 years. The mean private cost was $2,987. The net marginal private benefits were $919. The internal rate of return for 20 years was 30.6%.

Family Aid (completed). Table 23 shows that without allowances included in the calculations and at a discount rate of 4% the benefits outweigh the costs between nine and ten years, sixteen and seventeen years at 10%, but benefits do not outweigh costs when the discount rate is fixed at 14%.

The mean private cost was $3,220. The net marginal private benefits were $396. The private present values were: $2,164 at 4%, $153 at the 10% and -$595 at 14% discount rates.

TABLE 21

PRIVATE PRESENT VALUES AND PRIVATE INTERNAL RATES OF RETURN, WITH ALLOWANCES EXCLUDED, IN 1973 DOLLARS FOR TRAINEES WHO TERMINATED THEIR NURSING ORDERLY PROGRAMME

Interest Rate	Time in Years	Present Value	Mean Cost	Mean Before Training Net Earnings	Mean After Training Net Earnings	Marginal Benefits Or Loss	Pay-Off Period (yrs) Between
4%	10 yrs.	3,442					
	20 yrs.	8,481					
			4,017	4,017	4,937	919	8 and 9
	30 yrs.	11,886					
	40 yrs.	14,186					
10%	10 yrs.	1,633					
	20 yrs.	3,812					
			4,017	4,017	4,937	919	10 and 11
	30 yrs.	4,652					
	40 yrs.	4,976					
14%	10 yrs.	779					
	20 yrs.	2,073					
			4,017	4,017	4,937	919	14 and 15
	30 yrs.	2,422					
	40 yrs.	2,517					

Internal Rates of Return After	10 yrs.	18.8%	N = 9
	20 yrs.	22.5%	
	30 yrs.	22.8%	
	40 yrs.	22.9%	

TABLE 22

PRIVATE PRESENT VALUES AND PRIVATE INTERNAL RATES OF RETURN, WITH ALLOWANCES INCLUDED, IN 1973 DOLLARS FOR TRAINEES WHO TERMINATED THEIR NURSING ORDERLY PROGRAMME

Interest Rate	Time in Years	Present Value	Mean Cost	Mean Before Training Net Earnings	Mean After Training Net Earnings	Marginal Benefits Or Loss	Pay-Off Period (yrs) Between
4%	10 yrs.	4,472					
	20 yrs.	9,511					
			2,987	4,017	4,937	919	4 and 5
	30 yrs.	12,916					
	40 yrs.	15,216					
10%	10 yrs.	2,663					
	20 yrs.	4,842					
			2,987	4,017	4,937	919	5 and 6
	30 yrs.	5,682					
	40 yrs.	6,006					
14%	10 yrs.	1,809					
	20 yrs.	3,104					
			2,987	4,017	4,937	919	6 and 6
	30 yrs.	3,453					
	40 yrs.	3,547					

Internal Rates of Return After	10 yrs.	28.2%	N = 9
	20 yrs.	30.6%	
	30 yrs.	30.8%	
	40 yrs.	30.8%	

TABLE 23

PRIVATE PRESENT VALUES AND PRIVATE INTERNAL RATES OF RETURN, WITH ALLOWANCES EXCLUDED, IN 1973 DOLLARS FOR TRAINEES WHO COMPLETED THEIR FAMILY AID PROGRAMME

Interest Rate	Time in Years	Present Value	Mean Cost	Mean Before Training Net Earnings	Mean After Training Net Earnings	Marginal Benefits Or Loss	Pay-Off Period (yrs) Between
4%	10 yrs.	-6					
	20 yrs.	2,164					
			3,220	3,220	3,616	396	9 and 10
	30 yrs.	3,631					
	40 yrs.	4,622					
10%	10 yrs.	-785					
	20 yrs.	153					
			3,220	3,220	3,616	396	16 to 17
	30 yrs.	515					
	40 yrs.	654					
14%	10 yrs.	-1,153					
	20 yrs.	-595					
			3,220	3,220	3,616	396	Nil
	30 yrs.	-445					
	40 yrs.	-404					

Internal Rates of Return After	10 yrs.	4.0%	N = 8
	20 yrs.	10.7%	
	30 yrs.	11.9%	
	40 yrs.	12.2%	

The internal rate of return for the 20th year was 10.7%.

Table 24 shows that when the calculations were included in the allowances the mean cost was $2,845. The net marginal private benefits were $396. At 4% discount rate the benefits outweigh the costs between 9 and 10 years and between 14 and 15 years at the discount rate of 10%. At 14% benefits do not outweigh costs within 40 years. The private present values were $2,540 for 4%, $528 for 10% and -$220 for 14% rate of discount. With allowances included the internal rate of return shifted from 10.6% to 12.6%.

Family Aid (terminated). Tables 25 and 26 show negative benefits and negative present values at the 4%, 10$ and 14% discount rates. The mean cost was $5,033 without allowances and $4,912 with allowances included in the calculations. The net marginal loss was -$871.

High School (completed). Table 27 shows that the private benefits outweigh the private costs between the fifth and sixth years when the discount rate is 4%, between sixth seventh years at the discount rate of 10% and between eighth and ninth years at 14% discount rate. The mean private cost was $4,758. The net marginal private benefits were $1,104. The private present values were: $10,250 at a 4% rate of discount, $4,643 at a 10% discount rate and $2,556 at a 14% discount rate. The internal rate of return for 20 years was 22.8%.

TABLE 24

PRIVATE PRESENT VALUES AND PRIVATE INTERNAL RATES OF RETURN, WITH ALLOWANCES INCLUDED, IN 1973 DOLLARS FOR TRAINEES WHO COMPLETED THEIR FAMILY AID PROGRAMME

Interest Rates	Time in Years	Present Value	Mean Cost	Mean Before Training Net Earnings	Mean After Training Net Earnings	Marginal Benefits Or Loss	Pay-Off Period (yrs) Between
4%	10 yrs.	368					
	20 yrs.	2,540					
			2,845	3,220	3,616	396	9 and 10
	30 yrs.	4,006					
	40 yrs.	4,997					
10%	10 yrs.	-410					
	20 yrs.	528					
			2,845	3,220	3,616	396	14 and 15
	30 yrs.	890					
	40 yrs.	1,029					
14%	10 yrs.	-778					
	20 yrs.	-220					
			2,845	3,220	3,616	396	Nil
	30 yrs.	-70					
	40 yrs.	-29					

Internal Rates of Return After	10 yrs.	6.5%	N = 8
	20 yrs.	12.6%	
	30 yrs.	13.6%	
	40 yrs.	13.9%	

TABLE 25

PRIVATE PRESENT VALUES AND PRIVATE INTERNAL RATES OF RETURN, WITH ALLOWANCES EXCLUDED, IN 1973 DOLLARS FOR TRAINEES WHO TERMINATED THEIR FAMILY AID PROGRAMME

Interest Rate	Time in Years	Present Value	Mean Cost	Mean Before Training Net Earnings	Mean After Training Net Earnings	Marginal Benefits Or Loss	Pay-Off Period (yrs) Between
4%	10 yrs.	-12,100					
	20 yrs.	16,874					
			5,033	5,033	4,162	-871	
	30 yrs.	-20,100					
	40 yrs.	-22,279					
10%	10 yrs.	-10,387					
	20 yrs.	-12,451					
			5,033	5,033	4,162	-871	
	30 yrs.	-13,247					
	40 yrs.	-13,554					
14%	10 yrs.	-9,578					
	20 yrs.	-10,804					
			5,033	5,033	4,162	-871	
	30 yrs.	-11,134					
	40 yrs.	-11,224					

Internal Rates of Return After: 10 yrs., 20 yrs., 30 yrs., 40 yrs. — N/A

N = 9

TABLE 26

PRIVATE PRESENT VALUES AND PRIVATE INTERNAL RATES OF RETURN, WITH ALLOWANCES INCLUDED, IN 1973 DOLLARS FOR TRAINEES WHO TERMINATED THEIR FAMILY AID PROGRAMME

Interest Rate	Time in Years	Present Value	Mean Cost	Mean Before Training Net Earnings	Mean After Training Net Earnings	Marginal Benefits Or Loss	Pay-Off Period (yrs) Between
4%	10 yrs.	-11,979					
	20 yrs.	-16,753					
			4,912	5,033	4,162	-871	-
	30 yrs.	-19,979					
	40 yrs.	-22,158					
10%	10 yrs.	-10,266					
	20 yrs.	-12,330					
			4,912	5,033	4,162	-871	-
	30 yrs.	-13,025					
	40 yrs.	-13,432					
14%	10 yrs.	-9,457					
	20 yrs.	-10,682					
			4,912	5,033	4,162	-871	-
	30 yrs.	-11,013					
	40 yrs.	-11,102					

Internal Rates of Return After [illegible] yrs.
20 yrs.
30 yrs.
40 yrs.
Nil (Less than zero)

N = 9

TABLE 27

PRIVATE PRESENT VALUES AND PRIVATE INTERNAL RATES OF RETURN, WITH ALLOWANCES EXCLUDED, IN 1973 DOLLARS FOR TRAINEES WHO COMPLETED THEIR HIGH SCHOOL PROGRAMME

Interest Rate	Time in Years	Present Value	Mean Cost	Mean Before Training Net Earnings	Mean After Training Net Earnings	Marginal Benefits Or Loss	Pay-Off Period (yrs) Between
4%	10 yrs.	4,199					
	20 yrs.	10,250					
			4,758	4,758	5,862	1,104	5 and 6
	30 yrs.	14,338					
	40 yrs.	17,099					
10%	10 yrs.	2,027					
	20 yrs.	4,643					
			4,758	4,758	5,862	1,104	6 and 7
	30 yrs.	5,652					
	40 yrs.	6,041					
14%	10 yrs.	1,002					
	20 yrs.	2,556					
			4,758	4,758	5,862	1,104	7 and 8
	30 yrs.	2,975					
	40 yrs.	3,088					

Internal Rates of Return After	10 yrs.	19.2%	N = 64
	20 yrs.	22.8%	
	30 yrs.	23.2%	
	40 yrs.	23.2%	

Table 28 shows that with allowances included in the calculations the benefits outweigh the costs between the 4 and 4 years at 4% and 10% discount rates and between 5 and 6 years at 14% discount rate.

The mean cost was $3,293. The marginal net private benefits were $1,104. The private present values were: $11,090 at a 4%, $5,716 at a 10%, and $3,716 at 14% discount rates. The internal rate of return was 32.1%.

High School (terminated). Table 29 shows that withouth allowances included in the calculations the benefits outweigh the costs between the first and second years at all the three selected discount rates. The mean private cost was $3,995. The net marginal private benefits were $2,578. The private present values were: $31,052 at a 4%, $17,959 at a 10% and $13,084 at a 14% discount rate. The internal rate of return was 64.5%.

Table 30 shows that with allowances included in the calculations the benefits outweigh the costs between 2 and 3 years for each of the three selected discount rates. The mean private cost was $2,609.

The net marginal benefits were $5,278. The private present values were: $32,438 at a 4% discount rate, $19,345 at a 10%, and $14,470 at the discount rate of 14%. The internal rate of return was 98.8%.

TABLE 28

PRIVATE PRESENT VALUES AND PRIVATE INTERNAL RATES OF RETURN, WITH ALLOWANCES INCLUDED, IN 1973 DOLLARS FOR TRAINEES WHO COMPLETED THEIR HIGH SCHOOL PROGRAMME

Interest Rate	Time in Years	Present Value	Mean Cost	Mean Before Training Net Earnings	Mean After Training Net Earnings	Marginal Benefits Or Loss	Pay-Off Period (yrs) Between
4%	10 yrs.	5,290					
	20 yrs.	11,090					
	30 yrs.	15,007	3,293	4,758	5,862	1,104	4 and 5
	40 yrs.	17,654					
10%	10 yrs.	3,209					
	20 yrs.	5,716					
	30 yrs.	6,683	3,293	4,758	5,862	1,104	4 and 5
	40 yrs.	7,056					
14%	10 yrs.	2,226					
	20 yrs.	3,716					
	30 yrs.	4,117	3,293	4,758	5,862	1,104	5 and 6
	40 yrs.	4,226					

Internal Rates of Return After	10 yrs.	29.8%	N = 64
	20 yrs.	32.0%	
	30 yrs.	32.1%	
	40 yrs.	32.1%	

TABLE 29

PRIVATE PRESENT VALUES AND PRIVATE INTERNAL RATES OF RETURN, WITH ALLOWANCES EXCLUDED, IN 1973 DOLLARS FOR TRAINEES WHO TERMINATED THEIR HIGH SCHOOL PROGRAMME

Interest Rate	Time in Years	Present Value	Mean Cost	Mean Before Training Net Earnings	Mean After Training Net Earnings	Marginal Benefits Or Loss	Pay-Off Period (yrs) Between
4%	10 yrs.	16,921					
	20 yrs.	31,052					
			3,995	3,995	6,574	2,578	1 and 2
	30 yrs.	40,598					
	40 yrs.	47,047					
10%	10 yrs.	11,850					
	20 yrs.	17,959					
			3,995	3,995	6,574	2,578	1 and 2
	30 yrs.	20,315					
	40 yrs.	21,223					
14%	10 yrs.	9,456					
	20 yrs.	13,084					
			3,995	3,995	6,574	2,578	1 and 2
	30 yrs.	14,063					
	40 yrs.	14,327					

Internal Rates of Return After	10 yrs.	64.1%	N = 14
	20 yrs.	64.5%	
	30 yrs.	64.5%	
	40 yrs.	64.5%	

TABLE 30

PRIVATE PRESENT VALUES AND PRIVATE INTERNAL RATES OF RETURN, WITH ALLOWANCES INCLUDED, IN 1973 DOLLARS FOR TRAINEES WHO TERMINATED THEIR HIGH SCHOOL PROGRAMME

Interest Rates	Time in Years	Present Value	Mean Cost	Mean Before Training Net Earnings	Mean After Training Net Earnings	Marginal Benefits Or Loss	Pay-Off Period (yrs) Between
4%	10 yrs.	18,307					
	20 yrs.	32,438					
			2,609	3,995	6,574	2,578	2 and 3
	30 yrs.	41,984					
	40 yrs.	48,433					
10%	10 yrs.	13,236					
	20 yrs.	19,345					
			2,609	3,995	6,574	2,578	2 and 3
	30 yrs.	21,701					
	40 yrs.	22,609					
14%	10 yrs.	10,846					
	20 yrs.	14,470					
			2,609	3,995	6,574	2,578	2 and 3
	30 yrs.	15,449					
	40 yrs.	15,713					

Internal Rates of Return After	10 yrs.	98.7%
	20 yrs.	98.8%
	30 yrs.	98.8%
	40 yrs.	98.8%

N = 14

Academic Basic (completed). Table 31 shows that the net private benefits outweigh net private costs between the first and second year at a 4%, between the second and third year at a 10% and 14% discount rates. The mean private cost of the programme was $4,841. The net marginal benefits were $2,669. The private present values were: $31,144 at a 4%, $48,005 at a 10% and $12,842 at the 14% discount rate. The internal rate of return was 55.1%.

Table 32 shows that when allowances were taken into account, the private benefits outweigh the private costs between 2 and 3 years at all the three discount rates. The mean private cost was $3,052 and the after-training net private benefits were $7,511. The marginal net private benefits of $2,669. Present values were $33,233 at a 4%, $19,670 at a 10% and $14,631 at a 14% discount rate. The internal rate of return was 87.5%.

Academic Basic (terminated). Table 33 shows that when allowances were not included in the calculations, the private benefits outweigh private costs between the sixth and seventh year at the discount rate of 4%, between the eighth and ninth year at the discount rate of 10%, and between the eleventh and twelfth year at the discount rate of 14%. The mean cost was $5,697. The net marginal benefits were $1,020. The private internal rate of return was 17.2%.

Table 34 shows that when allowances were included the benefits outweigh the costs between 5 and 6 at 4%, between 7

TABLE 31

PRIVATE PRESENT VALUES AND PRIVATE INTERNAL RATES OF RETURN, WITH ALLOWANCES EXCLUDED, IN 1973 DOLLARS FOR TRAINEES WHO COMPLETED THEIR ACADEMIC BASIC PROGRAMME

Interest Rate	Time in Years	Present Value	Mean Cost	Mean Before Training Net Earnings	Mean After Training Net Earnings	Marginal Benefits Or Loss	Pay-Off Period (yrs) Between
4%	10 yrs.	16,814					
	20 yrs.	31,144					
			4,841	4,841	7,511	2,669	1 and 2
	30 yrs.	41,328					
	40 yrs.	48,005					
10%	10 yrs.	11,564					
	20 yrs.	17,889					
			4,841	4,841	7,511	2,669	2 and 3
	30 yrs.	20,328					
	40 yrs.	21,268					
14%	10 yrs.	9,085					
	20 yrs.	12,842					
			4,841	4,841	7,511	2,669	2 and 3
	30 yrs.	13,885					
	40 yrs.	14,128					

Internal Rates of Return After	10 yrs.	54.4%	N = 15
	20 yrs.	55.1%	
	30 yrs.	55.1%	
	40 yrs.	55.1%	

TABLE 32

PRIVATE PRESENT VALUES AND PRIVATE INTERNAL RATES OF RETURN, WITH ALLOWANCES INCLUDED, IN 1973 DOLLARS FOR TRAINEES WHO COMPLETED THEIR ACADEMIC BASIC PROGRAMME

Interest Rate	Time in Years	Present Value	Mean Cost	Mean Before Training Net Earnings	Mean After Training Net Earnings	Marginal Benefits Or Loss	Pay-Off Period (yrs) Between
4%	10 yrs.	18,603					
	20 yrs.	33,233					
			3,052	4,841	7,511	2,669	2 and 3
	30 yrs.	43,117					
	40 yrs.	49,794					
10%	10 yrs.	13,353					
	20 yrs.	19,678					
			3,052	4,841	7,511	2,669	2 and 3
	30 yrs.	22,117					
	40 yrs.	23,057					
14%	10 yrs.	10,874					
	20 yrs.	14,031					
			3,052	4,841	7,511	2,669	2 and 3
	30 yrs.	15,644					
	40 yrs.	15,917					

Internal Rates of Return After
- 10 yrs. 87.3%
- 20 yrs. 87.5%
- 30 yrs. 87.5%
- 40 yrs. 87.5%

N = 15

TABLE 33

PRIVATE PRESENT VALUES AND PRIVATE INTERNAL RATES OF RETURN, WITH ALLOWANCES EXCLUDED, IN 1973 DOLLARS FOR TRAINEES WHO TERMINATED THEIR ACADEMIC BASIC PROGRAMME

Interest Rate	Time in Years	Present Value	Mean Cost	Mean Before Training Net Earnings	Mean After Training Net Earnings	Marginal Benefits Or Loss	Pay-Off Period (yrs) Between
4%	10 yrs.	2,577					
	20 yrs.	8,167					
			5,697	5,697	6,717	1,020	6 and 7
	30 yrs.	11,944					
	40 yrs.	14,495					
10%	10 yrs.	571					
	20 yrs.	2,988					
			5,697	5,697	6,717	1,020	8 and 9
	30 yrs.	3,920					
	40 yrs.	4,279					
14%	10 yrs.	-375					
	20 yrs.	1,059					
			5,697	5,697	6,717	1,020	11 and 12
	30 yrs.	1,446					
	40 yrs.	1,551					

Internal Rates of Return After	10 yrs.	12.3%	N = 20
	20 yrs.	17.2%	
	30 yrs.	17.8%	
	40 yrs.	17.9%	

TABLE 34

PRIVATE PRESENT VALUES AND PRIVATE INTERNAL RATES OF RETURN, WITH ALLOWANCES INCLUDED, IN 1973 DOLLARS FOR TRAINEES WHO TERMINATED THEIR ACADEMIC BASIC PROGRAMME

Interest Rate	Time in Years	Present Value	Mean Cost	Mean Before Training Net Earnings	Mean After Training Net Earnings	Marginal Benefits Or Loss	Pay-Off Period (yrs) Between
4%	10 yrs.	3,798					
	20 yrs.	9,388					
			4,476	5,697	6,717	1,020	5 and 6
	30 yrs.	13,164					
	40 yrs.	15,716					
10%	10 yrs.	1,792					
	20 yrs.	4,208					
			4,476	5,697	6,717	1,020	7 and 8
	30 yrs.	5,140					
	40 yrs.	5,499					
14%	10 yrs.	844					
	20 yrs.	2,280					
			4,476	5,697	6,717	1,020	8 and 9
	30 yrs.	2,667					
	40 yrs.	2,771					

Internal Rates of Return After

10 yrs.	18.7%
20 yrs.	22.4%
30 yrs.	22.7%
40 yrs.	22.8%

N = 20

and 8 at 10%, and between 8 and 9 at 14% discount rates. The mean private cost was $4,476. The net marginal private benefits were $1,020. The present values were $9,388, $4,208 and $2,280 respectively at the 4%, 10% and 14% discount rates.

The internal rate of return for 20 years changed from 17.2% withouth allowances to 22.4% when allowances were included in the calculations.

Custodial (completed). Table 35 shows that with allowances included in the calculations the benefits outweigh the costs between the second and third year after completion of the training programme for all the three discount rates. The mean cost was $4,258. The net marginal private benefits were $1,753. The private present values were: $19,565 at a 4%, $10,665 at a 10% and $7,351 at a 14% rate of discount. The internal rate of return was $1,753.

Table 36 shows that the benefits outweigh the costs between the third and the fourth year for all the three discount rates. The mean private cost was $3,992. The net marginal private benefits were $1,753. The private present values were: $19,831 at a 4%, $10,932 at a 10%, $7,618 at a 14% discount rate. The private internal rate of return was 43.9%.

Custodial (terminated). Tables 37 and 38 show negative net private benefits and negative net private present values.

TABLE 35

PRIVATE PRESENT VALUES AND PRIVATE INTERNAL RATES OF RETURN, WITH ALLOWANCES EXCLUDED, IN 1973 DOLLARS FOR TRAINEES WHO COMPLETED THEIR CUSTODIAL PROGRAMME

Interest Rate	Time in Years	Present Value	Mean Cost	Mean Before Training Net Earnings	Mean After Training Net Earnings	Marginal Benefits Or Loss	Pay-Off Period (yrs) Between
4%	10 yrs.	9,959					
	20 yrs.	19,565					
			4,258	4,258	6,011	1,753	2 and 3
	30 yrs.	26,054					
	40 yrs.	30,437					
10%	10 yrs.	6,512					
	20 yrs.	10,665					
			4,258	4,258	6,011	1,753	2 and 3
	30 yrs.	12,266					
	40 yrs.	12,883					
14%	10 yrs.	4,884					
	20 yrs.	7,351					
			4,258	4,258	6,011	1,753	2 and 3
	30 yrs.	8,016					
	40 yrs.	8,196					

Internal Rates of Return After	10 yrs.	39.7%	N = 12
	20 yrs.	41.1%	
	30 yrs.	41.2%	
	40 yrs.	41.2%	

TABLE 36

PRIVATE PRESENT VALUES AND PRIVATE INTERNAL RATES OF RETURN, WITH ALLOWANCES INCLUDED, IN 1973 DOLLARS FOR TRAINEES WHO COMPLETED THEIR CUSTODIAL PROGRAMME

Interest Rate	Time in Years	Present Value	Mean Cost	Mean Before Training Net Earnings	Mean After Training Net Earnings	Marginal Benefits Or Loss	Pay-Off Period (yrs) Between
4%	10 yrs.	10,226					
	20 yrs.	19,831					
			3,992	4,258	6,011	1,753	3 and 4
	30 yrs.	26,321					
	40 yrs.	30,704					
10%	10 yrs.	6,779					
	20 yrs.	10,932					
			3,992	4,258	6,011	1,753	3 and 4
	30 yrs.	12,533					
	40 yrs.	13,150					
14%	10 yrs.	5,151					
	20 yrs.	7,618					
			3,992	4,258	6,011	1,753	3 and 4
	30 yrs.	8,283					
	40 yrs.	8,463					

Internal Rates of Return After	10 yrs.	42.7%	N = 12
	20 yrs.	43.9%	
	30 yrs.	43.9%	
	40 yrs.	43.9%	

TABLE 37

PRIVATE PRESENT VALUES AND PRIVATE INTERNAL RATES OF RETURN, WITH ALLOWANCES EXCLUDED, IN 1973 DOLLARS FOR TRAINEES WHO TERMINATED THEIR CUSTODIAL PROGRAMME

Interest Rate	Time in Years	Present Value	Mean Cost	Mean Before Training Net Earnings	Mean After Training Net Earnings	Marginal Benefits Or Loss	Pay-Off Period (yrs) Between
4%	10 yrs.	-16,672					
	20 yrs.	-20,563	6,473	6,473	5,216	-1,257	-
	30 yrs.	-28,218					
	40 yrs.	-31,362					
10%	10 yrs.	-14,200					
	20 yrs.	-17,179	6,473	6,473	5,216	-1,257	-
	30 yrs.	-18,327					
	40 yrs.	-18,770					
14%	10 yrs.	-13,032					
	20 yrs.	-14,802	6,473	6,473	5,216	-1,257	-
	30 yrs.	-15,279					
	40 yrs.	-15,408					

Internal Rates of Return After: 10 yrs., 20 yrs., 30 yrs., 40 yrs. — Nil

N = 3

TABLE 38

PRIVATE PRESENT VALUES AND PRIVATE INTERNAL RATES OF RETURN, WITH ALLOWANCES INCLUDED, IN 1973 DOLLARS FOR TRAINEES WHO TERMINATED THEIR CUSTODIAL PROGRAMME

Interest Rate	Time in Years	Present Value	Mean Cost	Mean Before Training Net Earnings	Mean After Training Net Earnings	Marginal Benefits Or Loss	Pay-Off Period (yrs) Between
4%	10 yrs.	-16,532					
	20 yrs.	-23,422					
			6,333	6,473	5,216	-1,257	-
	30 yrs.	-28,077					
	40 yrs.	-31,222					
10%	10 yrs.	-14,059					
	20 yrs.	-17,038					
			6,333	6,473	5,316	-1,257	-
	30 yrs.	-18,187					
	40 yrs.	-18,630					
14%	10 yrs.	-12,812					
	20 yrs.	-14,661					
			6,333	6,473	5,316	- 1,257	-
	30 yrs.	-15,139					
	40 yrs.	-15,267					

Internal Rates of Return After
10 yrs.
20 yrs.
30 yrs.
40 yrs.
N/A (Less than zero)

N = 3

The mean private cost was $6,473 without allowances and $6,333 with allowances included in the calculations. The net marginal private loss was -$1,257 without allowances and -$1,257 with allowances included in the calculations.

SUMMARY AND DISCUSSION OF PRIVATE PRESENT VALUES AND PRIVATE INTERNAL RATES OF RETURN

Summary

Table 39 summarizes the results of the private present values and private internal rates of return, with and without allowances included in the calculations, for all the programmes.

The overall weighted average net earnings before training were $4,707 and $5,730 after training. The private programme cost was $4,538. The average private present value was $1,190 and the private internal rate of return was 26%. Both the private present values and the private internal rates of return were higher than the social present values and the social internal rates of return.

The Skill Development Programme (High School and Basic Academic) tended to have greater private values and higher internal rates of return than the occupationally oriented programmes (Business Education, Family Aid, Nursing Orderly and Custodial).

All the trainees who completed the programmes had greater than zero private present values and private internal

TABLE 39

A SUMMARY OF PRIVATE PRESENT VALUES AND PRIVATE INTERNAL RATES OF RETURN FOR ALL TRAINEES

Programme	Private Present Values (Without Allowances)	Private Internal Rate of Return (Without Allowances)	Private Present Values (With Allowances)	Private Internal Rate of Return (With Allowances)
1. Business Education (completed)	5,442	27.4%	7,011	45.2%
2. Business Education (terminated)	8,704	40.4%	9,698	56.1%
3. Nursing Orderly (completed)	2,122	15.4%	2,361	28.6%
4. Nursing Orderly (terminated)	3,812	22.5%	4,842	30.6%
5. Family Aid (completed)	153	10.7%	528	12.6%
6. Family Aid (terminated)	-12,451	Less than zero	-12,330	Less than zero
7. High School (completed)	4,643	22.8%	5,716	32.0%
8. High School (terminated)	17,559	64.5%	19,345	98.8%
9. Basic Academic (completed)	17,889	55.1%	19,678	87.5%
10. Basic Academic (completed)	2,988	17.2%	4,208	22.4%
11. Custodial (completed)	10,665	41.1%	10,932	43.9%
12. Custodial (terminated)	-17,179	Less than zero	-17,038	Less than zero

rates of return. Trainees who terminated their Custodial and Family Aid programmes had negative private present values and negative private internal rates of return. The computer programme used for the present study did not include instructions for the calculation of negative private internal rates of return.

Private present values ranged from $17,889 and $19,670 with and without allowances for the Basic Academic (completed) to $153 and $528 for the Family Aid (completed). The private internal rates of return ranged from 64.5% and 98.8% for the High School (terminated) to 10.7% and 12.6% with and withouth allowances for the Family Aid (completed).

There were negative present values and negative private internal rates of return for the trainees who terminated their Custodial and Family Aid programmes even when allowances were included in the calculations of the benefit side.

Discussion

On one hand differences in private marginal benefits account for differences in the private present values and the internal rates of return among the programmes. Trainees who were taking the Basic Skill Development programme, for example, had higher after training earnings than trainees who were taking the occupationally oriented programmes.

On the other hand differences in the private present values and private internal rates of return were also a function

of differences in the foregone earnings of the trainees in the different programmes. However, since trainees who terminated their Custodial and Family Aid programmes earned less after taking some of the training programmes than they did before, thus no economic benefits could be attributed to whatever portions of the training programmes they took.

CHAPTER VI

ANALYSIS OF BACKGROUND VARIABLES, THE INTERNAL RATE OF RETURN AND COMPLETION OF PROGRAMMES

An attempt was made to relate background variables to two dependent variables: programme completion and the internal rate of return. The purpose was to ascertain differences in the characteristics between trainees who completed the programmes and those who terminated, similarly between trainees who obtained higher and lower than average internal rates of return for their respective programmes.

Chi-square tests were conducted using all the background variables that appeared in the questionnaire. To establish groups, the order shown in Appendix A (frequencies) was followed. Statistically significant differences among the groups at the 0.05 level are reported in tables 44 to 63 in Appendix A. A summary of these tables is given later in this chapter.

While the Chi-square test indicated that the groups were likely dissimilar in regard to the variable under consideration, it did not provide concrete evidence of the nature of the differences between the sub-groups. The attempt to explain the dissimilarities between groups was based on an examination of the contingency table. Thus the conclusions of this part should be considered subject to a greater chance

of error than might have been the case if a more comprehensive technique had been used.

Two groups of students, Custodial (terminated) and Family Aid (terminated), were excluded because of the negative private present values and the negative private internal rates of return. Such questions as "which trainees obtained higher or lower levels of internal rate of return?" did not apply to these groups.

Demographic Variables and the Internal Rate of Return

Tables 44 to 50 present Chi-square results of statistically significant groups at 0.05 level. The results were interpreted to mean that differences between groups were statistically significant when trainees were grouped according to age, permanent residence, employment record after training, reasons for being unemployed after training and whether or not they had been welfare payment recipients before training.

Tables 44 to 50 suggest that higher rates of return were obtained by individuals above 31 years of age, individuals who were in Edmonton and Calgary before training, trainees who considered their jobs before training to be unsatisfactory, trainees who worked before attending training, trainees who were employed after training, trainees who did not work after training because of family problems and trainees who did not receive welfare payments before attending training.

Table 40 presents a summary of seven significant Chi-square tests on personal and background variables and below average or above average programme internal rates of return; while Table 41 presents such information for non-significant results.

Demographic Variables and Programme Completion

Different groups were established for each of the demographic variables according to the frequencies included in Appendix A. Tables 51 to 63 present Chi-square results according to demographic variables, and completion and termination from the training programmes. The results indicate that the following differences were statistically significant: when trainees were classified according to age categories, to appreciation of knowledge categories, to communication in the family categories, to attention to physical fitness categories, to major goal at AVC categories, to degree of goal accomplishment at AVC categories, to present job preference categories, to employment record before AVC categories, to reasons for not being employed before AVC categories, to job and training relationship categories and to student loan and welfare payments before AVC categories.

Those who tended to complete their programmes were females, trainees who had between grade 7 and 12 level of education before AVC, trainees who felt they had little to gain in the appreciation of knowledge per se, and trainees

TABLE 40

SUMMARY OF TABLES 44 to 50 PRESENTING DEMOGRAPHIC VARIABLES AND BELOW AVERAGE OR ABOVE AVERAGE PROGRAMME INTERNAL RATES OF RETURN

Categorization	x^2	Probability
1. Age	6.90	0.031
2. Permanent Residence Before Training Programme	7.029	0.008
3. Reasons for Leaving the Last Job Before Training Programme	9.039	0.010
4. Employment Record Before Training	10.446	0.001
5. Employed After Training	13.442	0.000
6. Reasons for Being Unemployed Before Training	9.979	0.018
7. Welfare Payments Before Training	7.898	0.004

TABLE 41

SUMMARY OF CHI-SQUARE TESTS WHICH WERE NOT SIGNIFICANT AT .05 WHEN TESTING DEMOGRAPHIC VARIABLES AND BELOW AVERAGE OR ABOVE AVERAGE PROGRAMME INTERNAL RATES OF RETURN

Categorization	x^2	Probability
1. Sex	2.806	0.245
2. Marital Status	2.142	0.343
3. Ethnicity	0.439	0.932
4. Mother Tongue	6.432	0.093
5. Educational Level Before AVC	1.565	0.815
6. Father's Education	15.705	0.154
7. Mother's Education	2.155	0.827
8. Parents income	3.940	0.268
9. Reason for Going Back to School	2.242	0.524
10. Informatoin about AVE	0.793	0.673
11. Advice at AVC	0.123	0.747
12. Rating the Advice	0.144	0.093
13. Appreciation of Knowledge	1.197	0.549
14. Knowledge of Filling in Income Tax Form	2.620	0.269
15. Better Communication in the Family	0.404	0.817
16. Involvement in Local Community Affairs	1.200	0.548
17. Involvement in Leisure Activities	2.144	0.342
18. Attention to Physical Fitness	4.008	0.130
19. Shopping Selectivity	2.085	0.353
20. Major Goal at AVC	4.407	0.110
21. Degree of Goal Accomplishment	0.288	0.962
22. Whether Trained or Untrained in the Job Engaged in Before AVC	0.000	0.993

TABLE 41 Continued

Categorization	x^2	Probability
23. Means of Training (if 22 is "yes")	0.077	0.781
24. Family Size Before AVC	1.697	0.638
25. Family Size After AVC	1.108	0.775
26. Employer Before AVC	3.958	0.138
27. Employer After AVC	0.112	0.946
28. Reasons for Not Being Employed After AVC	7.076	0.245
29. Sponsorship	9.979	0.817
30. Student Loan	9.914	0.339
31. Relationship of Training and Job After AVC	1.859	0.173
32. Means of Obtaining Employment After AVC	3.975	0.553
33. Number of Times for Obtaining Employment	1.260	0.739

who preferred their present jobs to the jobs they did prior to training.

Whether the trainees completed their programmes or terminated their programmes before completion, the majority in either case felt that they gained much in improved communication within their families, the majority were attentive to physical fitness, the majority ranked their aims of going back to school as being occupational, general education and personal interest (high to low respectively). For both groups (completed) and (terminated) the majority were employed before AVC. However for the trainees not employed before their attendance at AVC family problems was the major reason given for their unemployment.

Table 42 gives a summary of thirteen significant Chi-square tests on personal and background variables and completion or termination of training programmes. Table 43 presents non-significant Chi-square tests on personal and background variables and completion or termination of training programmes.

SUMMARY

Statistically significant Chi-square results common to both below average and above average programme internal rates of return, and completion or termination of training programmes were observed when trainees were classified according to (i) employment record before training programmes, (ii) reasons for

TABLE 42

SUMMARY OF TABLES 51 to 63 WHICH PRESENT DEMOGRAPHIC VARIABLES AND COMPLETION OR TERMINATION OF TRAINING PROGRAMMES

Categorization	x^2	Probability
1. Sex	7.572	0.005
2. AVC Educational Level	11.276	0.023
3. Appreciation of Knowledge	8.210	0.016
4. Better Communication in the Family	11.570	0.003
5. Attention to Physical Fitness	6.287	0.043
6. Major Goal at AVC	9.769	0.007
7. Degree of Goal Accomplishment	28.423	0.000
8. Preference for the Present Job	5.571	0.01
9. Employment Before AVC	6.017	0.014
10. Reason for Not Being Employed	8.723	0.033
11. Relationship of Training and Job Performed After Training	7.506	0.006
12. Student Loan	3.056	0.080
13. Welfare Payments Before AVC	4.232	0.039

TABLE 43

SUMMARY OF NON-SIGNIFICANT CHI-SQUARE TESTS ON DEMOGRAPHIC VARIABLES AND COMPLETION OR TERMINATION OF TRAINING PROGRAMMES

Categorization	X^2	Probability
1. Age	2.806	0.245
2. Marital Status	1.088	0.585
3. Ethnicity	0.878	0.831
4. Mother Tongue	3.862	0.277
5. Permanent Place of Residence	0.074	0.785
6. Father's Education	9.212	0.162
7. Mother's Education	0.819	0.976
8. Parents Income	1.316	0.725
9. Reason to Return to School	2.416	0.491
10. Information About AVC	0.976	0.614
11. Advice at AVC	1.640	0.650
12. Rating the Advice	3.949	0.138
13. Knowledge of Filling In Income Tax Form	5.929	0.052
14. Involvement in Local Community Affairs	5.548	0.062
15. Involvement in Leisure Activities	1.817	0.403
16. Shopping Selectivity	0.627	0.731
17. Whether Trained or Untrained in a Job Engaged in Before Training Programme	0.014	0.906
18. Means of Training (if 17 is "yes")	0.157	0.692
19. Family Size Before AVC	2.948	0.339
20. Family Size After AVC	2.896	0.403
21. Employed Before AVC	0.371	0.831
22. Employed After AVC	0.255	0.884

TABLE 43 Continued

Categorization	x^2	Probability
23. Employed or Unemployed After AVC	0.674	0.412
24. Reason for Not Being Employed After AVC	6.791	0.237
25. Sponsorship	1.544	0.672
26. Means of Obtaining Employment After AVC	10.703	0.576
27. Number of Times Tried for Obtaining Employment After AVC	0.873	0.832

not being employed before training programmes, and (iii) whether or not trainees received welfare payments before entering training programmes.

CHAPTER VII

SUMMARY, CONCLUSIONS, AND IMPLICATIONS

SUMMARY

The basis of the analysis was the computation of present values and internal rates of return. Whether or not the findings indicated the investment choices are economically attractive was the key issue on which the interpretation of the results rested.

Marginal earnings streams were derived by finding the differences between costs and benefits of the training programmes. Social costs included direct costs of the programme (i.e. capital and current operational costs), plus the entire earnings streams foregone by society because the individual has taken up the programme. Social benefits consisted of expected increments to future earnings as estimated by comparing after training earnings of the trainees to before training earnings. For the calculations of private returns costs to the individual included only the net foregone earnings, and the private benefits to the individaul consisted of the estimated increments to future earnings streams.

Marginal earnings were discounted at the rates of 4%, 10% and 14% in order to compute the present values of the investment associated with the training programmes. The

internal rates of return for each programme were calculated for 10, 20, 30 and 40 year assumed service lives for the training investments.

Assumptions fundamental to human capital and its investment were considered to be essential also to the conceptualization of the present study. The major assumptions underlying the calculations of this study are:

1. Physical and human capital are similar, conceptually, and may be analyzed by similar tools.

2. Marginal earnings accruing to training programmes represent marginal productivity.

3. Studies employing cross-section data provide dependable projections of future earnings.

Social Benefits

When the present value method was used, the capitalized values of the training programmes per trainee turned out to range from $287 for the Basic Academic Programmes (terminated) to $21,472 for the Basic Academic Programme (terminated) at 10% discount rate. Social present values for the Family Aid (terminated) and Custodial (terminated) programmes ranged from -$13,266 to -$10,138.

Except for the Family Aid Programme (terminated) and Custodial Programme (terminated), the social present value of all other programmes were greater than zero indicating that from society's point of view, the investments were profitable.

Another method used for evaluating social profitability of the programmes by calculating was the internal rate of return. When a different question was asked, "At what discount rate will the present value equal zero?" the range of the rates was from 10.6% for Basic Academic (terminated) to 56.8% for Basic Academic (completed) among the programmes found to be socially economically profitable.

The social internal rates of return for the programmes Family Aid (terminated) and Custodial (terminated) were not calculated because they were negative.

Private Benefits

The analysis of private benefits was conducted in the same manner as in the case of social benefits. The private present values for the programmes found to be economically profitable ranged from $153 for the Family Aid (completed) to $17,959 for the High School (terminated). Private present values for the programmes Family Aid (terminated) and Custodial (terminated) were no greater than zero.

The private internal rates of return for the sub-programmes revealed an order similar to the private values. The private internal rates of return ranged from 10.7% for Family Aid (completed) to 64.5% for the High School (terminated).

A comparison of the present values and the internal rates of return indicate that both the private present values and the private internal rates of return were higher than the social present values and the social internal rates of return.

When Chi-square tests were used to ascertain statistically significant differences between groups who completed and did not complete the programmes thirteen personal and background variables seemed to differ significantly between the two groups. Seven personal and background variables seemed to differ in a statistically significant fashion between the groups with above average and below average programme internal rates of return.

CONCLUSIONS

The purpose of the study was to examine the economic profitability of the five manpower training programmes at the Alberta Vocational Centre, Edmonton. Three subproblems were specified.

Subproblems one and two involved identifying probable economic differences among the five programmes and to determine whether or not differences in economic profitability existed among the trainees who completed the programmes and the trainees who terminated their programmes before completion. The results of the study for the two subproblems may be summarized as follows:

Results of Subproblems I and II

Basic Skill Development programmes proved to be economically profitable from the individual's and society's points of view. Trainees who completed the basic academic programme obtained higher internal rates of return and greater

present values than the trainees who terminated their programmes. The reverse was true for the High School programme. In this programme the trainees who terminated their programme had higher internal rates of return and greater present values than the trainees who completed their programmes. These results can be traced, in part, to the fact that foregone earnings were greater for the trainees who terminated their programmes.

Occupationally oriented programmes, namely the Business Education and Nursing Orderly programmes tended to be economically profitable for individuals and for society. The findings showed that trainees who terminated these programmes obtained higher internal rates of return and greater present values. In these programmes foregone earnings did not affect programme costs because of negligible differences in the foregone earnings for the trainees who completed the programmes and for thos who did not. Greater present values and higher internal rates of return observable among the trainees who terminated the programmes were mostly due to the reduced operating costs which resulted from termination from the programmes without post-training earning apparently being affected much by the termination.

Occupationally oriented programmes, namely Family Aid and Custodial (completed) were found to be economically profitable in the eyes of both society and the individual trainees. The study showed that there were no economical profits for the trainees who terminated their programmes.

Trainees earned less after training than they did before training indicating an absence of increased labour productivity.

Results of the Subproblem III

Subproblem III of the study examined the probable relationship of personal and background variables.

There were seven independent variables measuring personal and background characteristics which were related significantly to above average and below average private internal rates of return. Thriteen other significant Chi-square results were obtained for the variables tested to indicate the relationship of personal and background variables to completion or termination of programmes as a dependent variable.

In general terms, considering only trainees who completed their programmes, investment priorities indicate the following order: Basic Academic, Custodial, Business Education, High School, Nursing Orderly and Family Aid. The findings revealed that, among trainees completing such programmes, the private internal rates of return ranged from 26% for Family Aid (completed) to over 50% for Basic Academic (completed), High School (terminated), Nursing Orderly (completed) and Business Education (completed) when allowances were included.

Inclusion of allowances in the calculations of the private internal rates of return was not sufficiently

effective in all cases. For example, the programmes Family Aid (terminated) and Custodial (terminated) proved not to be economically profitable even with allowances included in the calculations.

IMPLICATIONS

The following implications are suggested by the findings of the study:

1. The overall average social internal rate of return of 20.3% and the overall average private internal rate of return of 26% would seen to provide convincing evidence to justify the continuing operation of the programmes.

2. Greater present values and even higher internal rates of return observable among some of the students who terminated their programmes rather than completing them indicate inappropriate timing for operating these programmes. It would appear that the students who decide to drop out from the programmes do so when employment opportunities are attractive. This argument has the following implications:

   (a) Some evidence that programmes should be in full operation when the unemployment is high.

   (b) The programmes don't need to run on a continuous basis. The students would be better off if more flexibility of programme timing were available. If a student felt the employment market were open to him at a particular time

the student should leave the Centre and come back when employment conditions have changed. Alternatively some students may find it convenient to pursue evening programmes.

(c) It is possible that trainees who stay until they have completed their programmes are aware of non-monetary benefits that may be derived from a completed course.

3. The high present values and the internal rates of return observable among non-trade programmes (High School and Basic Academic) support Alberta's policy of developing programmes of manpower that are long range rather than short range, that is, that do not concentrate only on present occupational needs.

4. Lower present values and internal rates of return for occupationally oriented programmes like the Nursing Orderly (completed) indicate that society rates low the productivity of Nursing Orderlies.

5. Both the present values and the internal rates of return demonstrate that on the average private returns are high in the sense that they compare favourably with returns from other investments. The allowances considered as inducements, increase these present values and the rates of return substantially. As such, one would be inclined to think that the allowances are allocated needlessly. It seems likely that deductions or elimination of allowances will affect the

individual's decision to attend or not to attend training. The returns are already high without allowances.

6. The study revealed that many more females than males tend to complete their programmes. Men more frequently than women have the responsibilities to provide for their families and may have terminated their programmes for employment purposes. Thus the fact that more females completed these programmes may not be indicative of differences between the two groups based on any long-term economic benefits anticipated from the training programmes.

7. As Table 57 page . indicates, it appears trainees who enter the training with a clearly stated goal are more likely to complete their programmes. The indication is that trainees might find training more relevant if the Centre were more goal oriented. This might also tend to reduce the drop-out rate.

Impressions and Discussions

The following list points out some of the impressions arrived at during the conduct of the study.

1. The trainees tended to come from older parts of Edmonton like the Central Eastern area. For example, no trainee in the sample was located in the Riverbend or Westbrook districts.

2. A good number of students obtained jobs through the Centre's counselling services. In fact the number of students who obtained jobs after training in this way was

equal to the number of students who obtained their after training jobs from the manpower employment exchange.

3. Records at the Centre were below expected standards. A centralized and maybe computerized record system would be preferable.

4. It appears that recipients of welfare payments prior to attending training have a greater tendency to terminate their programmes than non-welfare payment recipients and that the former do not necessarily improve their productive capabilities through training.

SUGGESTIONS FOR FURTHER RESEARCH

Further research is necessary in the area of the economics of vocational education. The returns calculated in this study provide a basis for assessing the efficiency of training programmes, but returns from training programmes offered at different centres are necessary for comparisons. When comparative returns on other programmes are known, answers to some presently intractable problems are possible. Among these problems, the following are important: (1) How do returns from programmes operating at different Centres compare? (2) What effect does income received during the period of training, such as earnings from part-time work and allowances have on rate of return and present value? (3) What are the effects of additional expenditures, such as those expenditures associated with the cost of being away from home?

(4) What relationships exist between the economic returns to training programmes and cyclical conditions in the economy?

Another set of problems arise from the assumption that individuals are rational in their decisions and that individuals respond to economic incentives. It is important to know the effects of increased or reduced allowances.

Cost-benefit studies may be useful in the evaluation of alternative avenues to achieving the same training goal. A tradesman may be trained in several ways: through technical vocational programmes, through correspondence and through apprenticeship or on-the-job training. The returns of these algernative routes to training and re-training are worth measuring and comparing.

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APPENDICES

APPENDIX A

PRESENTATION OF CHI-SQUARE RESULTS ON DEMOGRAPHIC AND OTHER DATA

Demographic Variables and Above Average and Below Average Programme Internal Rates of Return

Tables 44 to 50 present the results of Chi-Square tests for those demographic variables found to be related to the programme Internal Rate of Return.

TABLE 44

CHI-SQUARE SHOWING THE DISTRIBUTION OF THE SAMPLE BY AGE AND BELOW AVERAGE OR ABOVE AVERAGE PROGRAMME INTERNAL RATES OF RETURN

	18-24	25-31	Over 31	Total
Below	23 (11.6%)	22 (11.1%)	16 (8.08%)	62 (31.2%)
Above	41 (20.6%)	32 (16.2%)	64 (32.2%)	137 (68.8%)
TOTAL	64 (32.2%)	54 (27.1%)	81 (40.7%)	199 (100%)

Chi-Square = 6.90 P = 0.031

Table 44 shows that there was a statistically significant result at 0.05 level of categories by age.

TABLE 45

CHI-SQUARE SHOWING THE DISTRIBUTION OF THE SAMPLE BY PERMANENT RESIDENCE AND BELOW AVERAGE OR ABOVE AVERAGE PROGRAMME INTERNAL RATES OF RETURN

	Urban	Rural	Total
Below (IRR)	40 (20%)	22 (11.1%)	62 (31.2%)
Above (IRR)	112 (56.3%)	25 (12.6%	137 (68.8%)
TOTAL	152 (76.4%)	47 (23.6%)	199 (100%)

Chi-Square = 7.029 P = 0.008

Table 45 presents statistically significant results at 0.05 level of categories by permanent residence.

TABLE 46

CHI-SQUARE SHOWING THE DISTRIBUTION OF THE SAMPLE BY REASONS FOR LEAVING LAST JOB AND BELOW AVERAGE OR ABOVE AVERAGE PROGRAMME INTERNAL RATES OF RETURN

	Sickness or Family Affairs	Unsatisfactory Job Conditions	Other	Total
Below (IRR)	8 (4%)	32 (16.1%)	23 (11.1%)	62 (31.2%)
Below (IRR)	12 (6%)	100 (50.3%)	25 (12.6%)	137 (68.8%)
TOTAL	20 (10.1%)	132 (66.3%)	47 (23.6%)	199 (100%)

Chi-Square = 9.039 P = 0.010

Table 46 indicates statistically significant results at 0.05 level of categories of reasons for leaving the last job before training programme.

TABLE 47

CHI-SQUARE SHOWING THE DISTRIBUTION OF THE SAMPLE BY EMPLOYED AND NOT EMPLOYED BEFORE TRAINING AND BELOW AVERAGE OR ABOVE AVERAGE PROGRAMME INTERNAL RATES OF RETURN

	Employed	Not Employed	Total
Below (IRR)	51 (25.8%)	11 (5.6%)	62 (31.3%)
Above (IRR)	80 (40.4%)	56 (28.3%)	136 (68.7%)
TOTAL	131 (66.2%)	67 (33.8%)	198 (100%)

Chi-Square = 10.446 P = 0.001

Table 47 shows statistically significant results at 0.05 level of categories of employment record before training programme.

TABLE 48

CHI-SQUARE SHOWING THE DISTRIBUTION OF THE SAMPLE BY EMPLOYED AND NOT EMPLOYED AFTER TRAINING AND BELOW AVERAGE OR ABOVE AVERAGE PROGRAMME INTERNAL RATES OF RETURN

	Employed	Not Employed	Total
Below (IRR)	58 (29.1%)	4 (2.0%)	62 (31.2%)
Above (IRR)	96 (48.2%)	41 (20.6%)	137 (68.8%)
TOTAL	154 (77.4%)	45 (22.6%)	199 (100%)

Chi-Square = 13.442 P = 0.000

Table 48 shows statistically significant results at 0.05 level of categories of employment record after training.

TABLE 49

CHI-SQUARE SHOWING THE DISTRIBUTION OF THE SAMPLE BY REASONS FOR BEING UNEMPLOYED BEFORE TRAINING AND BELOW AVERAGE OR ABOVE AVERAGE PROGRAMME INTERNAL RATES OF RETURN

	Sickness	Lack of Skill	Family Problems	Preference to Stay Home and other Reasons	Total
Below	0	1 (0.5%)	59 (25.6%)	2 (1.0%)	62 (31.2%)
Above	4 (2%)	4 (2%)	106 (53.3%)	23 (11.6%)	137 (68.8%)
TOTAL	4 (2%)	5 (2.5%)	165 (82.9%)	25 (12.6%)	199 (100%)

Chi-Square = 9.979 P = 0.018

Table 49 indicates statistically significant results at 0.05 level of categories by reasons for not being employed before training.

TABLE 50

CHI-SQUARE SHOWING THE DISTRIBUTION OF THE SAMPLE BY THE WELFARE PAYMENTS BEFORE TRAINING AND BELOW AVERAGE OR ABOVE AVERAGE PROGRAMME INTERNAL RATES OF RETURN

	Received Welfare Payments	Did Not Receive Welfare Payments	Total
Below	3 (1.5%)	59 (29.6%)	62 (31.2%)
Above	28 (14.1%)	109 (54.6%)	137 (68.8%)
TOTAL	31 (15.6%)	168 (84.4%)	199 (100%)

Chi-Square = 7.898 P = .004

Table 50 presents statistically significant results at 0.05 level of categories of receiving or not receiving welfare payments before training.

Demographic Variables and Completed and Terminated Groupings

Tables 51 to 63 present the results of Chi-Square tests for those demographic variables found to be related to completion or termination of training programmes.

TABLE 51

CHI-SQUARE TEST OF SIGNIFICANCE BETWEEN COMPLETED AND TERMINATED GROUPS AND SEX DISTRIBUTIONS

	Male	Female	Total
Completed	47 (22.8%)	100 (48.5%)	147 (71.4%)
Terminated	31 (15.0%)	28 (13.6%)	59 (28.6%)
TOTAL	78 (37.9%)	128 (62.1%)	206 (100%)

Chi-Square = 7.572 P = 0.005

Table 51 shows statistically significant results at 0.05 level by sex distributions.

TABLE 52

CHI-SQUARE TEST OF SIGNIFICANCE BETWEEN COMPLETED AND TERMINATED GROUPS AND BEFORE AVC EDUCATION LEVEL DISTRIBUTIONS

	Informal	Grade 6 or Less	Grade 6 - 9	Grade 10-12	College Other	Total
Completed	1 (0.5%)	5 (2.4%)	58 (28.2%)	81 (39.3%)	2 (1.0%)	147 (71.4%)
Terminated	2 (1.0%)	8 (3.9%)	22 (10.7%)	25 (12.1%)	2 (1.0%)	59 (28.6%)
TOTAL	3 (1.5%)	13 (6.3%)	80 (38.8%)	106 (51.5%)	4 ( )	206 (100%)

Chi-Square = 11.276 P = 0.023

Table 52 shows statistically significant results at 0.05 level by level of education distributions.

TABLE 53

CHI-SQUARE TEST OF SIGNIFICANCE BETWEEN COMPLETED AND TERMINATED GROUPS AND APPRECIATION OF KNOWLEDGE DISTRIBUTIONS

	Much Gain	Little Gain	No Gain	Total
Completed	29 (14.1%)	47 (22.8%)	71 (34.5%)	147
Terminated	19 (9.2%)	24 (11.7%)	16 (7.8%)	59
TOTAL	48 (23.3%)	71 (34.5%)	87 (42.2%)	206 (100%)

Chi-Square = 8.210 P = 0.016

Table 53 shows statistically significant results at 0.05 level by gain in the appreciation of knowledge distributions.

TABLE 54

CHI-SQUARE TEST OF SIGNIFICANCE BETWEEN COMPLETED AND TERMINATED GROUPS AND BETTER COMMUNICATION IN THE FAMILY DISTRIBUTIONS

	Much Gain	Little Gain	No Gain	Total
Completed	67 (32.5%)	41 (19.9%)	39 (18.8%)	147
Terminated	41 (19.9%)	13 (6.3%)	5 (2.4%)	59
TOTAL	108 (52.4%)	54 (26. %)	44 (21.4%)	206 (100%)

Chi-Square = 11.570 P = 0.003

Table 54 shows statistically significant results at 0.05 level by much improved communication within their families distributions.

TABLE 55

CHI-SQUARE TEST OF SIGNIFICANCE BETWEEN COMPLETED AND TERMINATED GROUPS AND ATTENTION TO PHYSICAL FITNESS DISTRIBUTIONS

	Much Gain	Little Gain	No Gain	Total
Complete	74 (64.3%)	47 (79.7%)	26 (81.3%)	147
Terminated	41 (35.7%)	12 (20.3%)	6 (2.9%)	59
TOTAL	115 (55.8%)	59 (28.6%)	32 (15.5%)	206

Chi-Square = 6.287 P = 0.043

Table 55 shows statistically significant results at 0.05 level by gain in physical fitness distributions.

TABLE 56

CHI-SQUARE TEST OF SIGNIFICANCE BETWEEN COMPLETED AND TERMINATED GROUPS AND MAJOR GOAL AT AVC DISTRIBUTIONS

	Occupational	General Education	Personal Interest	Total
Completed	103 (78.0%)	40 (78.4%)	4 (33.3%)	147
Terminated	40 (28.0%)	11 (21.6%)	8 (66.7%)	59
TOTAL	143 (69.4%)	51 (24.8%)	12 (5.8%)	206

Chi-Square = 9.769 P - 0.007

Table 56 shows statistically significant results at 0.05 level by major goals for entering training programmes distributions.

TABLE 57

CHI-SQUARE TEST OF SIGNIFICANCE BETWEEN COMPLETED AND TERMINATED GROUPS AND DEGREE OF ACCOMPLISHMENT OF THE MAJOR GOAL DISTRIBUTIONS

	100%	75%	50%	0%	Total
Completed	71 (81.6%)	37 (74.0%)	28 (19.0%)	11 (7.5%)	147
Terminated	11 (13.4%)	13 (26.0%)	16 (27.1%)	19 (32.2%)	59
TOTAL	82 (39.8%)	50 (24.3%)	44 (21.4%)	30 (14.6%)	206

Chi-Square = 28.423 P = 0.000

Table 57 shows statistically significant results at 0.05 level by degrees of accomplishment of the goal for training programme distributions.

TABLE 58

CHI-SQUARE TEST OF SIGNIFICANCE BETWEEN COMPLETED AND TERMINATED GROUPS AND PREFER PRESENT JOB DISTRIBUTIONS

	Prefer	Do Not Prefer	Total
Completed	84 (80.0%)	6 (46.2%)	90
Terminated	21 (20.0%)	7 (53.8%)	28
TOTAL	105 (89%)	13 (11%)	118 (100%)

Chi-Square = 5.571 P = 0.01

Table 58 shows statistically significant results at 0.05 level by present job preference distributions.

TABLE 59

CHI-SQUARE TEST OF SIGNIFICANCE BETWEEN COMPLETED AND TERMINATED GROUPS AND EMPLOYED BEFORE AVC OR NOT DISTRIUBTIONS

	Employed	Not Employed	Total
Completed	103 (76.9%)	43 (60.6%)	146
Terminated	31 (23.1%)	28 (39.4%)	59
TOTAL	134 (65.4%)	71 (34.6%)	205 (100%)

Chi-Square = 6.017 P = 0.014

Table 59 shows statistically significant results at 0.05 level by employment before training distributions.

TABLE 60

CHI-SQUARE TEST OF SIGNIFICANCE BETWEEN COMPLETED AND TERMINATED GROUPS AND REASON FOR NOT BEING EMPLOYED BEFORE AVC DISTRIBUTIONS

	Sickness	Lack of Skill	Family Problems	Preference to Stay Home and Other Reasons	Total
Completed	7 (3.4%)	6 (2.9%)	122 (59.2%)	12 (5.8%)	147
Terminated	5 (2.4%)	8 (3.9%)	39 (18.9%)	7 (3.4%)	59
TOTAL	12 (5.8%)	14 (6.8%)	161 (78.2%)	19 (9.2%)	206

Chi-Square = 8.723 P = 0.033

Table 60 shows statistically significant results at 0.05 level by family problems as major reason for not being employed before training programme distributions.

TABLE 61

CHI-SQUARE TEST OF SIGNIFICANCE BETWEEN COMPLETED AND TERMINATED GROUPS AND JOB RELATED TO TRAINING DISTRIBUTIONS

	Related	Not Related	Total
Completed	99	16	115
Terminated	28	14	42
TOTAL	127 (80.9%)	30 (19.1%)	157 (100%)

Chi-Square = 7.506 P = 0.006

Table 61 shows statistically significant results of 0.05 level by after training job relationship with training distributions.

TABLE 62

CHI-SQUARE TEST OF SIGNIFICANCE BETWEEN COMPLETED AND TERMINATED GROUPS AND STUDENT LOAN DISTRIBUTIONS

	Obtained	Not Obtained	Total
Completed	20 (58.8%)	126 (75.7%)	146
Terminated	14 (41.2%)	45 (26.3%)	59
TOTAL	34 (16.6%)	171 (83.4%)	205 (100%)

Chi-Square = 3.056 P = 0.080

Table 62 shows statistically significant results at 0.05 level by student loan recipients distributions.

TABLE 63

CHI-SQUARE TEST OF SIGNIFICANCE BETWEEN COMPLETED AND TERMINATED GROUPS AND WELFARE PAYMENTS BEFORE AVC DISTRIBUTIONS

	Received	Not Received	Total
Completed	18 (56.3%)	129 (74.1%)	147
Terminated	14 (43.8%)	45 (25.9%)	59
TOTAL	32 (15.5%)	174 (84.5%)	206 (100%)

Chi-Square = 4.232 P = 0.039

Table 63 shows statistically significant results at 0.05 level by receiving or not receiving welfare payments distributions.

APPENDIX B

INTERVIEW RECORD SHEET

ALBERTA VOCATIONAL CENTRE STUDENT SURVEY

NAME: _____

ADDRESS: _____

PHONE: Home _____ Bueiness _____

SOCIAL INSURANCE NUMBER: _____

1. What is your present age?

( ) 1. 17 or less
( ) 2. 18 to 24
( ) 3. 25 to 31
( ) 4. 32 to 38
( ) 5. 39 to 45
( ) 6. 46 to 51
( ) 7. 52 or older

2. Sex?

( ) 1. Male
( ) 2. Female

3. Marital status?

( ) 1. Single
( ) 2. Married
( ) 3. Divorced/separated
( ) 4. Widow/widower

4. If you are married, are you living with your spouse?

( ) 1. Yes
( ) 2. No

5. What ethnic group do you belong to?

( ) 1. White (Caucasian)
( ) 2. North American Indian
( ) 3. Metis
( ) 4. Any other race

6. What language did you learn to speak first?

( ) 1. English
( ) 2. French
( ) 3. German
( ) 4. Ukrainian
( ) 5. One of the North American Indian languages
( ) 6. Other (please specify) _____

7. Which of the following centres in Alberta is the nearest to your permanent place of residence (before training at A.V.C.)?

( ) 1. Edmonton
( ) 2. Medicine Hat and Lethbridge
( ) 3. Edson
( ) 4. Calgary
( ) 5. Red Deer
( ) 6. Grande Prairie and Peace River
( ) 7. Vermilion and St. Paul
( ) 8. Outside Alberta but in the Prairie Provinces and B.C. (e.g., Saskatchewan)
( ) 9. Outside Alberta but further than Manitoba (e.g., Ontario)

8. What was the highest level of education you attained before entering A.V.C.?

( ) 1. No formal education
( ) 2. Elementary (e.g., Grade 1-6)
( ) 3. Junior High (e.g., Grade 7-9)
( ) 4. Senior High (e.g., Grade 10-12 or 13)
( ) 5. Apprenticeship trade training

9. What was/ is the highest level of your father's education?

( ) 1. No formal education
( ) 2. Elementary (e.g., Grade 1-6)
( ) 3. Junior High (e.g., Grade 7-9)
( ) 4. Senior High (e.g., Grade 10-12 or 13)
( ) 5. Apprenticeship trade training
( ) 6. College or technical training
( ) 7. University training

10. What was/is the highest level of your mother's education?

( ) 1. No formal education
( ) 2. Elementary (e.g., Grade 1-6)
( ) 3. Junior High (e.g., Grade 7-9)
( ) 4. Senior High (e.g., Grade 10-12 or 13)
( ) 5. College or technical education
( ) 6. University education

11. What would you (roughly) say is/was your father's and mother/s combined yearly income (before tax) and before they turned 65 years of age?

( ) 1. Below $3,000
( ) 2. $2,000 to $4,999
( ) 3. $5,000 to $6,999
( ) 4. $7,000 to $9,999
( ) 5. $10,000 to $14,000
( ) 6. $15,000 or over

12. If you did not work at all one year before you started training at A.V.C., which of the following reasons was the most important? (check one)

( ) 1. I was sick or disabled
( ) 2. Problems of babysitter
( ) 3. Child/children were too young
( ) 4. Child/children was/were sick most of the time, or disabled
( ) 5. Could not obtain suitable employment
( ) 6. No special skill to qualify for a job
( ) 7. Did not look for employment
( ) 8. Turned down by employers so many times that I gave up
( ) 9. Other (please specify):

_____

_____

_____

13. If you were employed for one month or more during the year before coming to A.V.C., list below three job/jobs you were engaged in. (Include self-employment and employment by others.) Please list the most recent one first.

	(a) EMPLOYER (e.g., government or company	(b) JOB TITLE (e.g., printer)	(c) DURATION IN (months)
1.			
2.			
3.			

	(d) AVERAGE EARNINGS PER WEEK at the time you left each job	(e) HOLIDAY PAY AND BONUS	(f) AMOUNT PAID IN TAXES
	$ per week	$	$
	$ per week	$	$
	$ per week	$	$

14. Were you trained for the job/jobs you were engaged in?

( ) 1. Yes
( ) 2. No

15. If the job required training, how did you acquire it?

( ) 1. Correspondence School
( ) 2. College
( ) 3. On-the-job training
( ) 4. Apprenticeship
( ) 5. Friends or relatives

16. What was the one major reason for you to decide to leave your last job before coming to A.V.C.? (Please read the whole section first, and check one.)

( ) 1. Sickness, including disability
( ) 2. Family moved

(continued)

( ) 3. In order to travel
( ) 4. Other family affairs (e.g., sickness of a family member)
( ) 5. No advancement opportunities
( ) 6. The job was too strenuous (mentally or physically)
( ) 7. The job required working under unfavorable weather conditions
( ) 8. Unsatisfactory conditions of service (e.g., could not get along with boss)
( ) 9. Wages too low
( ) 10. So I could obtain training at A.V.C.
( ) 11. Work finished or business slowed down
( ) 12. Was not trained for the job so I was replaced
( ) 13. Employer bought new equipment which I could not use without training
( ) 14. The job was seasonal or of a temporary nature
( ) 15. Any other (specify)

_____

_____

17. What was the major reason for you to decide to go back to school? (Check one.)

( ) 1. Improve chances of steady employment
( ) 2. Increase chances of promotion at work
( ) 3. Learn a new trade or occupation
( ) 4. Upgrading (education/trade)
( ) 5. Raise earnings
( ) 6. Personal interest (learning for the sake of learning)
( ) 7. Other (please specify)

_____

_____

18. What was your one most important source of information about this institution?

( ) 1. My former teachers
( ) 2. Family member or friends
( ) 3. Mass media (newspaper, radio or television)
( ) 4. Sponsoring agencies (e.g., Canada Manpower, Depart of Indian Affairs, Health and Social Welfare Department)
( ) 5. Visiting speaker or counsellor
( ) 6. Brochures or calendars
( ) 7. Graduates or other students who have attended this institution
( ) 8. Other (specify)

_____

_____

19. When you first arrived at A.V.C., who gave you the most help in discussing your course or program?

( ) 1. A.V.C. counsellor
( ) 2. Instructor
( ) 3. Other students
( ) 4. A.V.C. supervisor or his assistant
( ) 5. Student council representative
( ) 6. Registrar
( ) 7. Program head
( ) 8. Other (please specify)

_____

_____

20. How would you rate the help you were given in selecting and planning your course or program?

( ) 1. Excellent
( ) 2. Good
( ) 3. Satisfactory
( ) 4. Poor

21. In this section you are required to indicate the degree of gain in the following item while you were at A.V.C.:

Items	Much Gain 3	Little Gain 2	No Gain 1
1. Appreciation of knowledge (e.g., to want to know about the world in general)			
2. Understanding of social, political and economic problems of Alberta and Canada			
3. Knowledge of dealing with forms (e.g., filling income tax form, filling or even writing an application form)			
4. Family life (e.g., better communication between you and your spouse or helping your children)			
5. Involvement in community activities (e.g., attending meetings and feeling free to state your views)			
6. Interest in leisure activities (e.g., visiting art galleries, museums, reading for leisure)			
7. Paying attention to physical fitness			
8. Knowledge to shop wisely and selectively			

22. While training at A.V.C., did you receive a training or living allowance?

( ) 1. Yes
( ) 2. No

23. If you received a training or living allowance, indicate the kind of allowance:

( ) 1. Training or living allowance

( ) 2. Travel allowance or transportation allowance
( ) 3. Other (please specify)

_____

_____

24. Indicate the amount of each allowance received per week; the number of weeks you received these allowances, and who you received the allowances from:

	TRAINING OR LIVING ALLOWANCE	TRAVEL ALLOWANCE	OTHER
1. Amount per week	_____	_____	_____
2. Number of weeks	_____	_____	_____
3. Who you received it from	_____	_____	_____

1. Social Development
2. Manpower
3. Provincial Government
4. Workman's Compensation Board
5. Indian Affairs
6. Other (please specify)

_____

_____

25. Did you obtain a student loan when you were at AVC.? How much did you receive?

$ _____

26. If you had a part-time job while at A.V.C., estimate the total earnings you received the whole period (it might be easier to multiply hourly wage by the number of days you worked).

Total amount of earnings from part-time job:

$_____

27. What is it that you went to A.V.C. to achieve (e.g., your ultimate goal)?

_____

_____

_____

_____

28. Did you achieve what you set out to accomplish?

( ) 1. Totally (100%)
( ) 2. Mostly (75%)
( ) 3. Partly (50%)
( ) 4. Not at all (0%)

29 (a) Are you presently employed?

( ) 1. Yes
( ) 2. No.

29 (b) If not employed, could you please check one reason from the following list:

( ) 1. I was sick or disabled
( ) 2. Problems of babysitter
( ) 3. Child/children were too young
( ) 4. Child/children was/were sick most of the time, or disabled
( ) 5. Could not obtain suitable employment

(continued)

( ) 6. No special skill to qualify for ajob
( ) 7. Did not look for employment
( ) 8. Turned down by employers so many times that I gave up
( ) 9. Other (please specify):

_____

_____

_____

30. If you are employed, is your present job:

( ) 1. Temporary or seasonal
( ) 2. Permanent
( ) 3. Part-time

31. Is the job:

( ) 1. The job you trained for
( ) 2. Related to the job you trained for
( ) 3. Unrelated to the job you trained for

32. How do you like your present job as compared to the one you had before attending A.V.C. training?

( ) 1. Like the job as well
( ) 2. Don't like the job as well

33. This section requires you to account for the entire time since leaving A.V.C. In other words, you are requested to write down your employment records and the record of time you spent without working. Please include all welfare payments you have received since leaving A.V.C.

Total time in months since leaving A.V.C. is:

_____ (_____months

(a) Total time spent on each job and total time spent without working	(b) Worked or did not work	(c) Employer/type of welfare payment.
1. _____ months	_____	_____
2. _____ months	_____	_____
3. _____ months	_____	_____
4. _____ months	_____	_____
5. _____ months	_____	_____

(d) Job Title	(e) Earnings per week when I left the job	(f) Holiday pay and bonus	(g) Amount paid in taxes
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____

34. Listed below are some of the possible means of obtaining employment. Which one method did you use to obtain the job you were engaged in immediately after A.V.C. training?

( ) 1. Looked up in newspaper/magazine, heard on radio, saw it advertised on company door
( ) 2. Learned about the job from a friend or from a relative
( ) 3. Registered with Manpower Employment Exchange

(continued)

( ) 4. Consulted former employer or formen
( ) 5. A.V.C. staff
( ) 6. Other means (please specify)

_____

_____

35. How many times did you try to look for the job you were engaged in soon after A.V.C. training?

( ) 1. Tried once
( ) 2. Tried twice
( ) 3. Tried three times
( ) 4. Tried four or more times

36. Did the size of your family increase by birth, adoption or close relative coming to live with you during your training period?

a. Before training family size including yourself:

1_____2_____3_____4_____5_____

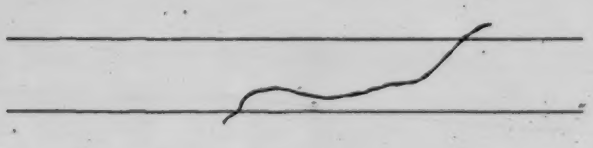
or more _____

b. After training family size including yourself:

1_____2_____3_____4_____5_____

or more _____

( ) 4. Consulted former employer or formen
( ) 5. A.V.C. staff
( ) 6. Other means (please specify)



35. How many times did you try to look for the job you were engaged in soon after A.V.C. training?

( ) 1. Tried once
( ) 2. Tried twice
( ) 3. Tried three times
( ) 4. Tried four or more times

36. Did the size of your family increase by birth, adoption or close relative coming to live with you during your training period?

a. Before training family size including yourself:

1_____2_____3_____4_____5_____

or more _____

b. After training family size including yourself:

1_____2_____3_____4_____5_____

or more _____

APPENDIX C

FREQUENCIES OF RESPONDENTS BY DEMOGRAPHIC AND OTHER VARIABLES

TABLE 64

FREQUENCIES OF RESPONDENTS BY DEMOGRAPHIC AND OTHER VARIABLES

Variable	18 - 24	25 - 31	Over 31	Total Responses
1. Age	71	56	85	206
2. Marital Status	Single	Married	Other	
	58	84	64	206
3. Family Size Before Training	One Person	Two to Three	Over Four	
	67	42	67	176
4. Family Size After Training	96	55	55	206
5. Employer Before Training	Government	Company	Self	
	26	94	4	124
6. Employer After Training	68	84	6	158
7. Reasons for leaving last job	Sickness or family affairs	Unsatisfactory job conditions	Other	
	56	8	-	64
8. Major Goal at AVC	Occupational	General Education	Personal Interest	
	143	51 (24%)	12 (7%)	206

Variable	Much Gain	Little Gain	No Gain	Total Responses
9. Knowledge to shop wisely	71	68	67	206
10. Participation in leisure time activities	73	65	68	206
11. Attention to physical fitness	88	59	59	206
12. Better Communication in the family	77	54	75	206
13. Local community involvement	64	61	81	206
14. Appreciation of knowledge	51	71	84	206
15. Knowledge of filling in forms	96	64	46	206

16. Sex	Male	Female	
	78	128	206
17. Permanent Residence	Urban (Calgary and Edmonton)	Rural	
	158	48	206
18. Employed before AVC or not	Employed	Not Employed	
	134	71	206

Variable			Total Responses
19. Trained for a job (before AVC)	Trained	Not Trained	
	10	122	133
20. Means of training for the job before AVC	On-the-job Training	Others	
	4	6	10
21. Employed after AVC	Employed	Not Employed	
	158	48	206
22. Job related to training	Related	Not Related	
	127	30	157
23. Prefer present job	Prefer	Do Not Prefer	
	105	13	118
24. Student Loan	Obtained	Not Obtained	
	34	171	206
25. Welfare payments before AVC	Received	Not Received	
	32	174	206
26. Earnings before AVC	Earned	Not Earned	
	133	73	206
27. Payment of taxes before AVC	Paid	Not Paid	
	95	111	206

Variables				Total Responses
28. Allowances	Received	Not Received		
	201	5		206
29. Part-time earnings earned	Earned	Not Earned		
	20	186		206
30. Welfare payments during training	Received	Not Received		
	21	185		206
31. Further training after AVC	Continued	Not Continued		
	9	-		9
32. Welfare payments after AVC	Received	Not Received		
	49	157		206
33. Earnings after AVC	Earned	Not Earned		
	156	50		206
34. Mother Tongue	English	French	N.A. Indian Language	Other
	136	11	18	41
35. Ethnicity	White	N.A. Indian	Metis	Other
	169	19	12	6 206
36. Accomplishment of the major goal	100%	75%	50%	0%
	82	50	44	30 206

Variable					Total Responses
37. Reason for not being employed before AVC	Sickness	Lack of Skill	Family Problems	Preference to stay home and other reasons	
	9	7	5	26	47
38. Reason for not being employed after AVC	4	3	14	28	49
39. Number of tries for employment after AVC	Once	Twice	Three Times	Four times or More	
	106	17	8	17	148
40. Reason for going back to school	Improve choice of employment	Learn a Trade	Upgrade	Personal Interest	
	27	49	62	68	206
41. Information about AVC	Mass Media	Sponsor	Informal means (friend/relative)	Other Means	
	23	75	29	79	206
42. Advising service at AVC	Counsellor	Instructor	Administrator	Students	
	77	74	14	14	179
43. Rating the advice at AVC	Good	Satisfactory	Poor		
	74	56	50		180

Variable							Total Responses
44. Means of obtaining employment after AVC	Mass Media	Friend or Relative	Former employer	AVC Staff	Manpower Employment Exchange	Other	
	55	30	26	24	25	2	162
45. Before AVC educational level	Informal	Grade 6 or Less	Grade 7-9	Grade 10-12	College and Other		
	3	12	80	102	4		201
46. Father's education	19	56	67	31	31		204
47. Mother's education	13	61	61	50	20		205
48. Parents' income bracket	3,000 and less	3,000-7,000	8,000-10,000	Over 15			
	34	51	26	74			205
49. Sponsor	Prov. Govt.	Man-Power	W/Compensation	Indian Affairs	Other	More than One	
	82	73	6	12	10	8	191